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A Monthly Record of Medicine, Surgery and the Collateral Sciences

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Cases of Interest in the Genito-Urinary Service of St. Peters Hospital

HENRY H. MORTON, M. D., F. A. C. S.

ATTENDING GENITO-URINARY SURGEON, ST. PETER'S HOSPITAL; PROFESSOR EMERITUS AND CONSULTING SURGEON, DEPARTMENT GENITO-URINARY DISEASES, LONG ISLAND COLLEGE HOSPITAL,

Brooklyn, N. Y.

Nephritis Dolorosa

In the days before the application of x-rays to the diagnosis of kidney stones, it was not an unusual experience for patients complaining of paroxysmal pain in one kidney region, to be subjected to an exploratory nephrotomy for stone. After the surgeon had exposed the kidney, explored the pelvis with his finger, and punctured the parenchyma in various directions with a needle, no stone was discovered; and yet, after the wound had healed, the patient would be cured of his disability.

Such conditions are well understood now, and have been described under the name of nephritis dolorosa. In this disease there exists a definite pathology, and the reason for the cessation of the pain after the operation is clear to us. As a result of a long continued pyelitis, which may be due to infection or caused by the presence of a small stone, a thickening of the kidney capsule takes place. When the kidney becomes engorged with blood or the intra-pelvic pressure is increased from retention of urine in the pelvis, often caused by a kink of the ureter, or perhaps a stricture, the kidney cannot expand within the thickened capsule, and a dull, aching pain, which may be more or less constant, or sometimes paroxysmal is caused. Decapsulation of the kidneys removes the thickened capsule, and the kidney expansion is no longer interfered with by its pressure. It is probably by relieving pressure, that the symptoms of renal stone disappear after an incision into the kidney with more or less removal of the capsule. Another theory for the relief of symptoms which always follows decapsulation in these aching kidneys is not the purely mechanical one just described, but Papin, of Paris, has thought that by severing the sympathetic nerves, which occurs when decapsulation is done, the constricting vasomotor nerves of the renal arterioles are divided, and the vasodilators allow the vessels to the glomeruli to dilate, and so equalize the circulation.

Whichever of these theories may be accepted, we find that decapsulation relieves the pain of which these patients complained.

Aching kidneys are often found to be displaced downwards, thus causing a kink in the ureter and an overfilling of the pelvis with urine. At the time of decapsulation, the kidneys should be placed in the proper position and fixed to the rib, thus straightening out the ureter and preventing a damming back of the urine in the pelvis.

The following case illustrates the condition just described: Mrs. B., 44 years, widow. Complaining for past three months of pain in the right loin, paroxysmal in character, an accompanied vomiting, attacks lasting two to three weeks. She had lost ten pounds in weight; had never had hematuria, but voided four or five times at night. Palpation showed the right kidney displaced below rib and easily felt. The urine was turbid from pus, acid and 1015 specific gravity. The cystoscope showed the bladder to be normal, except for a few small hemorrhagic spots. Ureteral catheterization: on the right side the catheter was passed nearly up to the pelvis but was obstructed and did not enter the pelvis, thus giving rise to the suspicion of a prolapsed kidney and kink in the ureter. No urine flowed through the catheter.

On the left side, the catheter was easily passed into the pelvis of the kidney and normal urine was obtained. Plain *x*-ray plates showed no stone shadows and the

Benign Papilloma of Bladder destroyed by Fulguration with the High Frequency Current

pyelogram of the right side showed enlargement of the pelvis with a prolapsed kidney and a kink in the ureter close to the junction of the pelvis.

At the time of the operation, it was my intention to decapsulate and fix the kidney, thus straightening out the ureter, but on exposing the kidney and bringing it out upon the flank, I found it was so small and atrophied that it was of no value, and rather than try to save a useless kidney, I concluded that it was better to remove it, and this was done. On examination of the kidney after its removal, it was found to be very small, consisting mostly of dilated pelvis with a thin and atrophied parenchyma. The capsule was very much thickened and the remains of an old perinephritic abscess, which had undergone fibrosis, were found in the perirenal fat. Dr. Feinblatt, the pathologist, confirmed these findings, and considered the atrophy of the parenchyma due to intra-pelvis pressure from damming back of the urine.

The patient made an uneventful recovery. This case illustrates the danger of delay in operating upon such patients. Had the kidney been exposed before the atrophy of the parenchyma occurred, it could most probably have been saved by fixation and decapsulation.

Renal Calculus and Pyelonephrosis

The following case demonstrates the importance of making an early diagnosis of stone in the pelvis of the kidney, and removing it promptly in order to save the kidney from destruction.

A. B., male, aged 47. Complained for eight years past of constant dull pain in the right lumbar region, although actively engaged in business during this time. Three weeks before admission to St. Peters Hospital, he had an attack of severe pain, shooting down to the right testicle. The pain was more or less constant for a week. The urine was turbid from pus and a small clot of blood was passed. Ureteral catheterization showed much pus coming from the right kidney, and no phthalein returned. The urine from the left kidney was clear and the phthalein returned in four minutes. The radiogram showed a smooth, round shadow, three-fourths of an inch in diameter in the upper calyx, and the pyelogram showed a markedly dilated pelvis. Right nephrectomy was done; the kidney was considerably enlarged and high up under the rib, and quite adherent to the surrounding tissues. It was brought up on the flank and the pedicle clamped, ligated, and cut off. The wound was closed around a drain.

Examination of the kidney after its removal showed a very greatly dilated pelvis filled with pus, and the kidney parenchyma thinned out and of no secreting value, except a small portion at the lower pole, which appeared to be normal. A small, round stone, three-fourths of an inch in diameter lay in the upper calyx. The patient made an uneventful recovery.

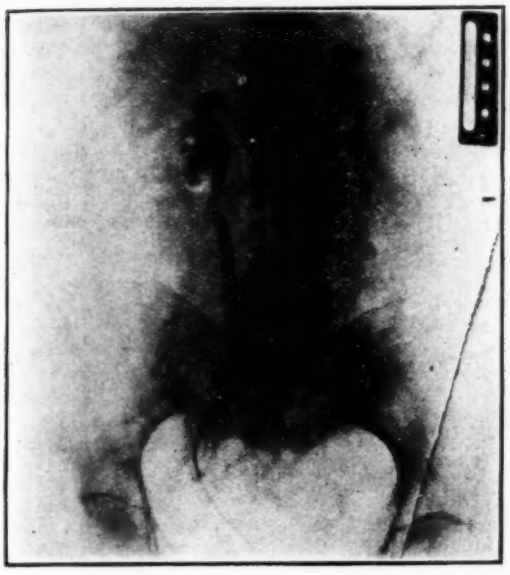
If the stone had been diagnosed when the symptoms began, it could easily have been removed by posterior pyelotomy, which is an operation with practically no mortality. A nephrolithotomy was not considered in this particular case for the reason that the risk to the patient's life, with the hope of perhaps saving a kidney which was worthless as a secreting organ, was not to be thought of. As we had ascertained beforehand that the remaining kidney was sound, nephrectomy was the correct procedure. Nephrolithotomy, even at the present stage of our enlightened diagnosis and surgery in kidney affections, carries a high mortality, 8 to 10 per cent, even in the best of hands. The patients are liable to have severe secondary hemorrhage several days after the operation, or an acute suppurative nephritis with general sepsis. Both conditions require an immediate secondary nephrectomy, which is always much more dangerous than a primary nephrectomy.

Nephrolithotomy, or opening the kidney through the convex posterior border, has its field of usefulness in cases where the stone cannot be reached by pyelotomy, and the kidney is not badly diseased. In such cases, the patient's interest is better conserved by taking the greater risk of nephrolothomy and preserving the kidney, than by removing a fairly healthy organ.

Pyelogram of Pyelo-Nephrosis

The surgical judgment upon which an operation is indicated can only be arrived at by careful previous

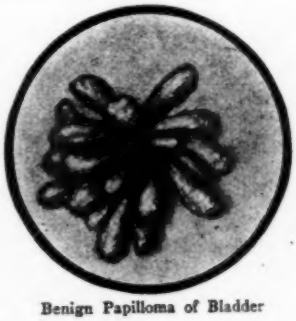
study of the patient by radiograms, pyelograms, and kidney function tests; and the final decision rests on the mechanical factors of the location of the stone and its accessibility, together with the number and sizes of the stones. Furthermore, the important question of the secreting value of the other kidney must be definitely known before any operation is planned or attempted.



Nephritus Dolorosa Pyelogram showing kink in ureter

Hematuria and Bladder Tumor

J. M., male aged 36, entered St. Peters Hospital, with a history of having noticed a slight, painless hematuria six months ago, which occurred three times subsequently. He was not particularly alarmed at his condition, but after the third attack thought it wise to secure medical advice. He was fortunate enough to fall into the hands of a keen, alert general practitioner, who instead of prescribing a styptic internally and reassuring the patient that the bleeding was nothing and would cease spontaneously, as is unfortunately so often done, insisted at once upon a cystoscopic examination.



Benign Papilloma of Bladder

On introducing the cystoscope, we found a small benign papilloma just above the left ureter. Fulguration with a high frequency bipolar current through the cystoscope was employed. A week later the patient was again cystoscoped and the tumor was found to be entirely destroyed.

The importance of recognizing promptly the cause of every bleeding from the bladder cannot be too strongly emphasized, for with the early recognition of bladder tumors, treatment may be instituted at once. It is now well recognized that every bladder tumor is potentially malignant, either from its commencement, or in the case of benign papillomata, from undergoing a transformation into a malignant type. In early malignant cases, much may often be accomplished by surgical excision, but this to be of any avail must be undertaken before the growth has extended much. In the benign papillimata, the treatment by fulguration will remove nearly all of them if used before they become too large or extensive.

The thought which these cases impress upon one is that every hematuria calls for an immediate investigation of the cause by cystoscopic examination, reinforced, if needed, by ureteral catherization, *x-rays* and pyelograms.

32 Schermerhorn Street.

Mortality in Surgical Diseases

The complaisance with which the profession, and for that matter the laity, regards the lessened mortality of surgical operations might be somewhat shaken by a communication from Willis (*Surgery, Gynecology and Obstetrics*, March, 1926), who points out, as the result of his study of figures published through the Bureau of Vital Statistics, that there is an increase of 77 per cent in the death rate from gall-stones in 1922 as contrasted with the records of the first years of this century. A similar contrast shows an increase in the death-rate of gastrointestinal ulcer of 72 per cent and of appendicitis of 31 per cent, whilst the mortality accompanying thyroid disease showed an increase of 250 per cent. Such increments, though clearly set forth in records available to both laymen and doctors, have excited but little attention; or by those to whom they are known are ascribed as a rule to increased diagnostic acumen incident mainly to the help rendered by laboratories and to the more accurate setting forth of the causes of death made possible by a greater diagnostic surety.

In a recent discussion of what may be called the avoidable deaths from appendicitis, as reported in the statistics of the British Isles, it was held that practically all these cases could have been saved by prompt surgical intervention and that the underlying cause of mortality was incident to failure in early diagnosis and hence in prompt intervention.

It is undoubtedly true that more of these cases are being promptly recognized than ever before. It is also true that many, probably the majority, of the deaths are due to delayed surgical intervention. It may also be questioned, and is so done by Willis, as to whether or not the increased mortality may not be due to lack of surgical judgment, surgical skill, and surgical organization.

The astonishing low mortality published by great clinics headed by great surgeons and teachers, has led both the profession and the public at large to believe that such mortality may be expected from any hospital or from any surgeon—a belief for which there is no sound foundation. An operation for goitre, for appendicitis, for gastric or duodenal ulcer performed by one with manual dexterity, large experience, with the patient properly and completely prepared, anesthetized by one thoroughly trained and skilled by long experience, with nurses and assistants organized into a thoroughly coördinating team, seems so simple, so swiftly accomplished and in its results so successful that the medical and surgical onlooker is convinced not only as to its ease and simplicity, but as to his own ability to repeat it with equally successful results. Providing he be clean and gentle, this conviction, though rudely shattered, may be attended by no particularly disastrous results; and if he be conscientious, deft, an organizer, and with the surgical instinct, he may himself learn in time and through effort and study to evolve what Moynihan calls a ritual, and may serve his patients as well as they are served in the great clinics. If he be neither clean, gentle, nor conscientious, he will be a contributing factor to that mortality unpublished in medical literature, but demonstrating in vital statistics a death-rate from ills of the flesh, which should be, and are, amenable to proper surgical intervention.

In his Abdominal Surgery, Moynihan has set forth with singular clarity and earnestness what he calls the ritual of surgical operation, and the characteristics and experience needful for one who would take upon himself the grave responsibilities of the operator. No better advice could be given to the student, to the hospital interne who looks toward surgery as his field of endeavor, or to the surgeon busy with a large service and too often calloused, by group familiarity, to individual suffering.

A correction of abuses involving human suffering and life will come with an authoritative study of heavy and avoidable surgical mortality and a calling to account those individuals and institutions responsible for it.—(*Ther. Gaz.*, July, 1926.)

The Mortality Rate

The death rate in 66 cities of the United States for the 48 weeks of the calendar year was 13.2 per thousand. These figures, gathered by the Bureau of Census, were made public by the Department of Commerce on December 2.

Urology for the General Practitioner

II.—Hemorrhagic Acute Nephritis of Infectious Origin

VICTOR COX PEDERSEN, A.M., M.D., F.A.C.S.

New York City.

In general terms the kidneys act as filters and remove from the blood many by-products of metabolism in normal life and living or dead bacteria and their toxines or the by-products of disease in pathological processes. In many instances temporary or persistent, constant or relapsing microscopic or microscopic blood is a symptom. In every case hematuria demands determination of its source and cause if possible.

Although modern processes in pathological investigation seem to have reached perfection, nevertheless it is impossible to discover bacteria in the blood or the urine in many of these patients and furthermore the soluble toxines which may underlie the nephritis and its hemorrhage, produced at the focal point of infection, as in the tonsils, are unknown as to their nature, development and toxicity. In other words we do not know the chemical quality and characteristics of the poison, how it is developed and why in some subjects it causes serious involvement of the kidneys with or without hemorrhage whereas in the same epidemic of tonsillitis, for example, other subjects escape either altogether as to nephritis and certainly as to hemorrhage.

During the past five years I have encountered four cases of hemorrhagic nephritis all with fatal issue in so brief a period that exhaustive study of the condition was difficult or impossible. The notes of these cases follow those of other fatal cases in literature. As in most of the reports collected the blood and the urine in the two patients who had the best study were negative for bacteria. I am so interested in the entire problem that I wrote to Dr. James Ewing, Professor of Pathology at the Cornell University Medical College, New York City, and quote his conclusive reply as follows, written under date of February 4th, 1927—"I have not seen cases of acute tonsillitis with severe degeneration of kidneys in which a sterile condition of the blood was proved, but I think such cases must occur. Especially in scarlet fever there are conditions approaching this in which the kidneys are very badly damaged, apparently by excretion of streptococcus toxin."

Discussions of causes are interesting. The earliest cases in literature regard such hemorrhage from the kidney as "idiopathic" which, of course, entirely begs the question and means nothing because a lesion such as hemorrhage from any organ must have a cause and cannot possibly originate of itself. Later contributions are almost equally in the dark by discussing toxins alone although the chemistry and origin thereof still remain to be demonstrated as of to-day and were scarcely defined as of that time. More recent studies ascribe the bleeding to bacteria alone, to toxins alone or both combined. Because of the obvious probability of the last consideration, the work of Bumpus and Meisser [1] is most worthy of reference. These observers injected cultures of the streptococcus from the teeth and tonsils of patients suffering from kidney breakdown, chiefly pyelonephritics and produced kidney lesions in animals so injected. It seems almost obvious that certain organisms have a selective action on the kidney, but in the light of the work of Pappenheimer, Hyman and Zeman referred to later in this article under the subject of bacteria in the blood and the urine, the kidneys possess a positive action for filtering bacteria and excreting toxins from the blood.

As a figure of speech in explanations to my patients I am apt to say that the ashes of life arising from the physiological processes of each organ as such and of the body as a whole comprised of all the organs are filtered out of the system in solution or suspension by the kidneys. The said ashes are foreign substances not available for use by the body hence in the same way exactly bacteria and their toxins are foreign bodies and are removed by the kidneys.

The cause of such renal hemorrhage is any acute infection chiefly in the tonsils but also in the nose, throat, ears and cervical glands—more frequently in children than in adults. The infection as a whole, or its bacteria, or its toxines or the latter two in association are probably the underlying factors. One of the most adequate researches in this new field is that of Boyd,[1] containing twenty-six cases as follows: tonsillitis eleven, scarlet fever four, otitis media three, nasopharyngitis three, umbilical infection one, mercuric chloride one, and unknown three. The activity of the subjective signs of the focal process, clinically speaking, is not necessarily a factor, certainly not nearly as much as severity of the process and deficiency of resistance. In other words an infection which locally has little disturbance may cause death through degeneration of the kidneys. Blood in the urine of adults of bacterial origin is somewhat more familiar and many types of organisms have been detected of which two predominate, the streptococcus and the bacillus coli. That the infection is a profound one is illustrated by the presence of other renal involvement such as pyelitis and emboli and by the occurrence of other than urinary sequels such as cervical adenitis, endocarditis, septicaemia and purpura.

A suggestion as to why it is so difficult to prove a culture in the blood or the urine is that the majority of these patients are seen in hospitals and do not apply for treatment during the first hours of symptoms. It is possible that a shower of bacteria reach the blood and are filtered out of it by the kidneys with the resulting hemorrhage produced by the bacteria themselves or their toxines developed either in the kidney substance or that which is more probable at the original focus. Later in this article is reference to experimental studies which seem to prove that bacteria are very rapidly received and destroyed in the kidneys of animals.

In order to reduce this work to a common basis of excellence, a more or less constant standard of examination should be accepted and followed. Of course control of the patient adequate for such investigation is presupposed but unfortunately is usually not attainable. The details employed by Boyd[2] *(op. cit.)* can hardly be improved and were daily or nearly daily urinalyses for quantity specific gravity, blood (microscopic and macroscopic), albumin, chlorids, epithelium, casts, etc. Blood chemistry was done at regular intervals, espe-

[1] Foci of Infection in Cases of Pyelonephritis, Jl. A.M.A., LXXVII, 1475-8, Nov. 5, 1921.

[2] Nephritis in Children, Am. Jl. Dis. of Child., May, 1922. XXII, 5, p. 375.

cially for nonprotein nitrogen, urea nitrogen, creatinin, chlorids and sugar. The renal function was followed by the tests for concentration, dilution and water excretion power and finally, by preference during the declining symptoms, the phenolsulphonephthalein test. From such courses of study consistent and reliable deductions will be made in time.

Cultures of the urine will require careful washing of the penis or vulva with mild antiseptic, evacuation into sterile receptacles; under continued aseptic precautions and high speed centrifugation, smears are examined and implants made. Several laboratory experts have told me that a growth should appear in forty-eight hours if at all, and lead to a diagnosis. Less time is required for the common pyogenic organisms. Thoroughness of work would require keeping the culture under observation for three or four days. These statements apply to the aerobic organisms. Longer periods are required for the anaerobic organisms.

Culture of urinary specimens is so difficult that it is frequently unsatisfactory or only partially conclusive. Hill, Hunt and Brown [1] report 21 cases as follows: sterile sixteen, staphylococcus albus two (probably contamination) diphtheroid organisms one (not accounted for), colon bacillus two. They conclude first that in most cases of acute nephritis in children there are no bacteria in the urine or the kidney; second, that bacteria may appear early but die quickly and third that soluble toxins may cause the disease. Boyd, in the study already mentioned, found two growths in eleven cultures attempted. Notwithstanding these difficulties in my opinion, cultures under the most aseptic precautions should always be attempted. Technique and results will improve together, as always.

The objective symptoms are interesting as described in literature. Tonsillitis is taken as the type case as it is the most common source of infection. The majority of patients complain of little discomfort in the throat. This rather corresponds with many other vicious infections because accompanied by depression rather than stimulation of metabolism. Boyd discovered the streptococcus haemolyticus in pure culture from the throat in two cases and from the blood in three cases. Leucocytosis, chiefly as lymphocytosis is moderate if present but more commonly absent. Secondary anaemia arises from hemorrhage or the action of toxins. Blood pressure usually unaltered may be slightly elevated but is without relation to the changes in the urine, blood or blood pressure. Cardiac enlargement is rare except as antemortem dilatation. As in most infections the liver and spleen are enlarged in perhaps most of these cases.

The varieties of nephritis are two, fatal and recovered. Patients who survive have acute resolving or nonresolving nephritis, chronic glomerulonephritis and nephrosis.

This contribution considers only the fatal cases in literature because my own cases were all fatal and this contribution has arisen from research into the matter.

Boyd, in the contribution already quoted, records five deaths from the following causes: nephrosis one, septicemia two, nasopharyngitis with cranial symptoms one, acute nephritis superimposed on chronic nephritis one.

In the prognosis of these cases well applied functional tests precede clinical symptoms in time and exceed them in value. Persistent, increasing or relapsing edema or blood are unfavorable. Constant elevation of blood pressure and fixation of specific gravity, especially if the specific gravity declines, are also unpromising indications. Definitely low dye tests, especially phenosulphonephthalein are alarming. Blood chemistry is important especially when changes in the constituents are consistent and continue after the acute symptoms have subsided. Hence, high creatinine, nonprotein nitrogen and urea nitrogen have a definite serious meaning. Secondary aenemia associated with persistent urinanalytic signs of nephritis always mean an unfavorable outcome.

Bacteria may be present in the blood and urine and probably always are at some period of the disease which civil conditions of practice make impossible of universal determination. Fever, oliguria or temporary anuria followed by haematuria are probably the symptoms which mean the onslaught of bacteria upon the kidney. In this connection one must remember the experiments of Pappenheimer, Hyman and Zeman.[1] Living bacteria injected into the blood of animals were rapidly taken up by the polymorphological and endothelial cells of the glomeruli. In about four hours they were digested. Such lysis may produce toxins leading to the hemorrhage, just as toxins are produced in the tonsils, cervical glands and teeth. One may comment that if the lysis of the bacteria does not occur they reach the urine from which they may be cultured and in addition continue great damage to the kidney substance.

Postmortem findings as far as reported in literature vary between the acute and the chronic cases. Acute nephritis shows congestion and general enlargement of the kidney usually with, sometimes without great cellular proliferation in the glomeruli, blood and casts in the tubules and degeneration of the proximal convoluted tubules. Highly various combinations and relations of these findings of course occur. The interstitial tissue may be nearly normal or as in most cases show early fibrosis. The chronic specimens show enlargement and granulation of the kidney and inflammatory changes of all stages and types exactly as occur in any other form of chronic nephritis.

In the diagnosis recognition and emphasis must be placed on cultures of the blood and the urine, tonsils, teeth, sinuses and other foci. A correlation or identity between the culture of bacteria as they exist in such foci, travel in the blood and make their exist in the urine, is the chief problem for the pathologist in the diagnostic proof of all these cases. Beyond all question such proof will presently be forthcoming.

The functional tests deserve this general comment according to my experience. In general terms and perhaps in particular terms much more than the average practitioner realizes, a urinalysis shows the status of the kidney function only as of the time when the specimen was secured. In many cases, therefore, a few days may show a great change for the better in hopeful cases and for the worse in hopeless cases. These principles apply more to medical cases than to operative cases because the operation usually is done at a definite time which coincides more or less with the time of the said tests and their results as the final determinations. Fortunatly those functional tests which disturb the patient least are not only advisable but the most serviceable in these cases. The concentration test seems to be the best. Boyd states that the specific gravity was never absolutely fixed in any of her patients who recovered from acute nephritis. Probably second in importance to concentration is its converse test, namely dilution of the urine and excretion of forced water intake. This test is equivalent to polyuria in the kidney separation tests

[1] The Bacteriology of the Urine in Acute Nephritis in Children. Am. Jl. Dis. of Child., No. 25, 1923. p. 198.

[1] Proc. N. Y. Path. Soc., XVI. 73. 1926.

so popular among urologists fifteen years ago. If its curve agrees with the other functional tests it has good corroborative value. Poor tests are often followed by good ones and edema may be provoked by the test. The risk of added work upon a diseased heart in my opinion contraindicates its use, provided there is any evidence of cardiac involvement or disturbance. As in pneumonia and similar acute infections, changes in the chlorides show development of the case. Low chlorides may appear early and improve as the urinary activity and quantity improve. Such a phenomenom is by no means unusual. In fact it is rather consistent with the behavior of chlorides in all kidney work.

The uncertainties of blood chemistry as shown in a recent contribution of my own [1] mean that normal or nearly normal findings do not indicate normal kidneys necessarily exactly as normal or nearly normal urine does not essentially establish sound kidneys. On the other hand, however, consistent increase in the various nitrogen compounds of the blood is important especially if persistent.

Blood is almost always present in the acute stage, especially microscopically, and quite commonly macroscopically. In my own cases its quantities were amazing. It may disappear more or less spontaneously and then relapse with the slightest increase in the rest of the disease. The injection of dyes occasionally increases the bleeding or causes it after a disappearance.

Edema is practically always present and varies from slight puffiness under the eyes to general distribution. None of my cases had it in any marked state but in literature the majority showed this symptom and its persistence or generalization is by no means a favorable sign.

The quantity of urine is important, independently of experimental polyuria. The return to the normal quantity in favorable cases is usually consistent and uninterrupted although of course definitely slow. Uremia arising from deficient excretion of urine and of course the toxic state is usually asthenic. It may be severe and persistent and associated with focal or general convulsions. Boyd states that acidosis may occur.

The following are the author's two fatal cases among a large number of simpler cases with recovery. There were also two other deaths a number of years ago whose records have been lost and memory of which indicates that they came within this category. They did not have any searching investigation. These were in the days when such lesions were called "idiopathic", "symptomless", "spontaneous" hemorrhage from the kidneys. Chemistry of the blood was just coming into diagnostic being. In fact, if Boyd is correct her own contribution and that of Hill, Hunt and Brown are the first really scientific studies into this type of nephritis in children. Case 1—Child about eight years old; parents, brothers and sisters healthy; previous health good except children's diseases without known renal or other systemic complications. About five weeks before my consultation visit an intense tonsillitis developed with high and variable fever, depression and endocarditis. Before this attack the kidneys were probably normal and nothing definite was noticed as to the urine until about five weeks after the tonsillitis had occurred and had practically disappeared. Perhaps two weeks after the endocarditis, very active hemorrhage into her urine occurred. The blood came not in attacks or with intermissions but continuously and rather copiously. I immediately gave an unfavorable prognosis. The urinalysis was typical of acute destruction of the kidneys with all signs present, blood, casts, epithelia and the like. A culture of the urine and of the blood was negative although performed by the pathologist of one of the truly great hospitals of New York. About the third day after my call the child sat up in bed for some trivial purpose and dropped dead, probably from cardiac failure. The nurse and mother who were present said the child collapsed, fell over in the bed and ceased breathing. This patient was a private-home case so that the usual routine of examinations possible in hospitals could not be performed except on a step-by-step basis. The child died before the various tests spoken of in this paper could be planned and executed.

Case 2—Referred to me in 1922 by my assistant, Dr. Michele Iovine. As in the other report and for the same reason, namely domiciliary and not institutional relations, all data are not possible. The boy was fourteen years old with a negative family and personal history except that he had acquired by accident extragenital syphilis a few years before this illness. He had had antisyphilitic treatment with success. There was no known renal disease until the present sickness. While playing ball on a very cold day in December, the child caught a severe cold with fever which really developed into an intense tonsillitis with secondary involvement of most of the cervical glands on both sides of the neck. Dr. Iovine was called on the second day of this sickness. He found the patient suffering from acute parenchymatous nephritis with hemorrhage as shown by the urinalysis. This patient went steadily downhill and died on the fifth day after the onset of the tonsillitis of acute progressive uremia. Undoubtedly a blood chemistry, if it had been possible, would have been typical of positive accumulation of the toxins in the blood. In this instance a culture of the urine and the blood was done unfortunately with negative results. This patient therefore belongs to the group of individuals who have an ultraintense throat infection followed by destruction of the kidneys so severe that they pass out of function, and the patient dies in the midst of acute uremia.

Whereas this contribution is interested chiefly in the fatal cases, the following epitomes of the literature are worth while, as to both fatal and nonfatal cases:

Peace [1] reports an epidemic among eight patients living within fifty yards of each other; ages 5 to 25 years; intense tonsillitis during four or five days; full recovery; diphtheria tests negative for all; acute hemorrhage from the kidneys in all, twelve to fourteen days after the tonsillitis; classic subjective, objective and laboratory signs; apparent full recovery from kidney lesions. Comment: no bacteriology or chemistry of the blood or urine. Peace regards these as toxic cases.

Caudill [2] notes a semi-epidemic in Giles County, Virginia, and emphasizes bacteraemia as present in nephritis from throat diseases; reports three cases among eight seen; ages 14 to 50 years; recurrent tonsillitis; renal lesions one to five days after onset of tonsillitis; acute hemorrhage from the kidney in one case followed by apparent full recovery. Comment: no record of bacteriology of blood or urine or chemistry of blood.

Thorburn [3] reports two cases among young children;

[1] Chemistry of the Blood, Med. Times, Nov., 1925, Int. Jl. of Med. and Surg., Nov., 1925.

[1] Nephritis following Tonsillitis, Brit. M. J., I: 17, Jan. 2, 1926.

[2] Relation of Throat Infections to Acute Nephritis, Virginia M. Monthly, 52: 348-250, July, 1925.

[3] Relation of Tonsillar Infection to Nephritis in Children, Anna. Otol., Rhin. and Laryng., 34:1090-1104, Dec., 1925.

acute tonsillitis; acute hemorrhagic nephritis with recovery. Comment: No record of bacteriology of blood or urine or chemistry of blood.

Cautley[4] had two cases: females, age 10 and 17 years; younger child had three attacks of tonsillitis, acute hemorrhagic nephritis followed in one attack by erysipelas, decapsulation of the kidney with temporary relief; cure followed tonsillectomy. Comment: unfortunately final cultural and chemical analysis of this case is lacking. The older girl had chronically infected tonsils removed which contained Gram-positive organisms of the pneumococcus group which seemed to underlie the renal condition; total recovery.

Smith and Bailey[5] emphasize tonsillectomy in the treatment as safe and essential and cultures of the throat in the diagnosis; two recoveries, one fatality. The death occurred in a fairly nourished child; acute suppression of urine during chronic nephritis, probably from infancy; several attacks of tonsillitis and severe diarrhea; severe hemorrhagic nephritis in November, 1919; tonsillectomy with primary recovery in September, 1922, followed by relapse of the nephritis and death in November, 1922. Comment: This patient is undoubtedly a chronic nephritis augmented and extended by repeated tonsillitis and intestinal disease.

Wright[6] reports one case of acute nephritis following tonsillitis; tonsillectomy followed by rapid reduction of the oedema; kidney function estimated but blood chemistry not conclusive.

Loeb[7] details four cases; diphtheria and scarlet fever carefully excluded; nephritis of the nonscarlatinal hemorrhagic type, fever absent, edema little or none; nephritis followed apparent recovery from the tonsillitis whereas in diphtheria and scarlatina it appears with the disease; tonsillitis in these cases apparently slight; but for diagnosis and treatment of the tonsils the nephritis might have been called "idiopathic"; full recovery in all. Comment: all the diagnosis steps in the blood and the urine were not carried out.

Harner[8] had three cases with recovery and showing the same source, course and results. This writer emphasizes the theory of toxins alone and alludes to experimental work already spoken of in this contribution. Comment: clinical diagnosis undoubtedly correct but the full bacteriology was not worked up.

Morse[9] adds the histories of four patients with recovery—two adults and two children; there is every clinical certainty that tonsillitis alone was the cause. Comment: again the full quality of diagnosis as to bacteriology in the blood, urine and tonsils and chemistry of the blood is not worked out.

Treatment

Removal or relief of the focus of infection is the first and chief indication. Strange as it may seem, tonsillectomy, even under ether anesthesia did not influence the nephritis unfavorably and positively according to the reports mentioning this operation. In other words, removal of the tonsils did not release into the circulation overwhelming quanities of bacteria or toxins and the ether when used likewise did not damage the struggling kidneys.

The following treatment is epitomized from Boyd's article already quoted because it gives the best review of treatment.

1. In the management the patient remains in bed until the nephritis is proved to be absent. Milk diet from 1,000 to 1,600 c.c., according to age, thus furnishing sufficient salt, proteid and fluid for observation. As excretion of waste products establishes itself, the diet is cautiously increased to include cereals, milk puddings and vegetables. Clinical cure permits fish, chicken, eggs and meat on alternate days.

2. Acidosis seems to be related to retained phosphates. Boyd's cases received 5 Gramme doses four times a day of calcium chloride or lactate without the definite results indicated by Howland and Marriott[1], and claimed for edema according to Huelse[2]. Acidosis, if present, is apparently much affected, but no author in literature has been found who has used bicarbonate of soda in free amounts.

3. Hotpacks were used but abandoned on account of depression. Hot lumbar stupes were more efficient and less depressing. Physical measures especially radiant light and dry heat are not mentioned but have a great place in all cases of this type and will, as time goes by, be more and more recognized and more and more used.

4. Transfusion has been useful in uremia and anemia.

It will be noted that the earliest of these case reports and studies are Morse's (1904), Loeb's (1910) and Harner's (1915). Loeb's article is the only one of the series examined which contains a very satisfactory bibliography. A long interval of seven years occurs until Wright's brief contribution of 1917. One may say that the spirit of investigation of this problem seems to have spent itself temporarily by 1910 and that with the energies of a new group of workers the problem has been reconsidered and more nearly solved during the decade ending with 1927. The bibliography appended to this paper dates as far back as 1881 and covers approximately three decades. Leyden's paper in 1881 is a valuable study of the early stages of renal breakdown. It appeared before the theories and facts of bacteriology, toxines and their action, susceptibility and immunity and similar knowledge common in modern medical science (especially in pathogenesis and pathology) were definitely conceived, saying nothing of their being clearly formulated and even indirectly proved. The list is arranged chronologically because such a relation tends to indicate the scope of the work during a whole generation. Many of these studies repay reading by anyone greatly interested.

The forty-five years since 1881 represent the life and passing of that generation physicians and scientists who saw bacteriology and allied science struggle into birth, early development and later maturity. Small wonder that problems such as those of renal disease—especially acute hemorrhagic processes—should be approaching answer only at the present time.

Conclusions

The following may be said to be the average profes-

[4] Tonsillar Infection and Kidneys, Arch. Ped., 40:84-87, Feb., 1923.
[5] Relation between Chronic Tonsillitis and Acute Kidney Infections, Arch. Ped., 40:525-530., Aug., 1923.
[6] Acute Nephritis Following Tonsillitis, Med. Clin., Chic., 2:1307, May, 1917.
[7] Acute Nephritis Following Acute Tonsillitis, Trans. Am. Laryng., Rhin. and Otol. Soc. 1910, 146-159.
[8] Acute Nephritis, a Sequela to Tonsillitis, J. Kansas M. Soc., 1910, 345-349.
[9] Tonsillitis a Cause of Acute Nephritis, Arch. Ped. 1904, XXI, 337-341.

[1] Arch. Int. Med. XVIII, 709, Dec., 1916 and XXII, 477, Oct., 1918.
[2] Central bl. f. Inn. Med. XLI, 25, 1920.

sional judgment concerning these cases as they are reported in literature so far as I have been able to reach important reports:

1. As to cause infection is the chief cause of hemorrhagic nephritis, especially in children and the tonsils, teeth, sinuses and intestines usually contain the primary foci.

2. As to pathology the few fatal cases subjected to autopsy show intracapillary glomerulonephritis with degeneration of the tubules. Chronic nephritis repeats this process and adds fibrosis and contracture. In nephrosis the tubular changes are predominant and associated with any other possible change.

3. As to diagnosis, prognosis and treatment, all functional tests are of supreme importance but the best two seem to be concentration and blood chemistry.

4. As to prognosis, the favorable cases reveal good functional tests, consistent clinical improvement and restoration of urine to the normal.

5. As to clinical types in childhood, the acute glomerulonephritis (resolving or nonresolving) chronic globerulonephritis and nephrosis are usual.

6. As to the source of chronic cases, the majority show an old nephritis with typical urine upon which the acute process is engrafted.

7. As to relapsing cases, the disease is essentially severe and the prognosis unfavorable. Probably most of these patients have had a previous acute nephritis resulting in damaged kidneys rather than in complete recovery so that the added acute hemorrhagic lesion is all the mort destructive of the kidney.

8. As to treatment, all the ordinary methods are available of relieving the kidneys of their extra work. The calcium salts have been used for the edema with reasonable success. Alkalies up to the limit of tolerance are available for acidosis and undoubtedly modern methods of physical therapy will be used more and more to relieve the kidneys of their burden.

This subject is a very difficult one, deserves and will receive more and more attention and probably better solution as to cause, pathology, prognosis and treatment. The comments offered in this contribution are not to be regarded as adverse criticisms, but rather as thoughtful regret that there is not greater uniformity in approaching this entire problem.

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Medical Fellowship

Medical fellowship, like everything else worth having, lies not in the saying, nor yet in the thinking, but in the doing. Deeds, deeds, are what is wanted today. Theory leads to study and investigation; practice convinces of worth.

The physician is, by his peculiar mode of life, a somewhat selfish mortal, so far as social intercourse with his colleagues is concerned. He is somewhat like the turtle, living within his professional shell, passing and repassing others daily with but the conventional bow and wave of the hand. And, perhaps, not coming together in personal contact for weeks, except in a formal consultation.

No doubt, you have known of medical practitioners who have lived in your town for months without becoming well acquainted with one another. And when they have become well acquainted with one another, to their surprise, perhaps, they have found every physician to be much more friendly and helpful than they had been led to think he was.

So medical fellowship ought no longer to be regarded as a dream of visionaries, or a theory advanced and advocated only by the optimists of the profession. It should be a fully established rule of medical ethics, resting upon the same truth and capable of the same demonstration as other rules of equity govern in the welfare of the practitioner.

It is imperative for the physician to look at life as it is; to be cheerful, first, because he must, and, after a while, because it is a conservative life-saving measure needed to make him accomplish his real work. Observations made wherever a physician hangs out his sign show that conditions are much the same which cause the trials that most physicians, sooner or later, experience.

The active, wide-awake physician has his severe critics and his sincere friends; his hot-headed enemies and his effusive defenders; his jealous rivals and his helpful competitors. Consequently from the life of every physician, is evolved a homely philosophy, which, if he takes it seriously, is a pleasant help in times of trial, in times of comfort. and in times of defeat.

Five hundred years before the Christian era, in the golden age of Grecian history, the principles of medicine were plainly demonstrated by a man who rose superior to the superstitions of his age, and struck the first blow for liberty in medicine. Hippocrates was a studious priest of the Asklepios of Cos. He boldly attacked and overthrew existing traditions, and laid the foundations of scientific medicine so firmly and so broadly upon the impregnable principles of reason and experience that they can never be shaken nor overthrown.

These Hippocratic principles have been handed down to us, passing through age to age to our time. And, notwithstanding the phenomenal progress of rational medicine, they have practically remained unchanged. They have been proved the foundations of true medicine. The sincerity of Hippocrates has never been doubted by reasonable members of the medical profession. He entered upon his work of investigation and medical advancement with an eagerness and determination unequaled in his day. It is but fair to say that every succeeding age has had medical men who were equal, if not superior, to the famous Grecian. There have always been investigating minds in medicine—and there always will be such minds.

But if every physician will prove himself as true and faithful in his labors for the advancement of his noble profession, as Hippocrates proved himself to be, there will be a still more wonderful change in medicine of the future. Indeed, all physicians should strive to emulate the work of Hippocrates—all should be tireless workers. And every physician should study daily, if he desires to become conversant with the best results of modern practice.

But the physician who permits himself to be impressed by the claims of a selfish, envious disposition which leads him to think that he can not mingle with his fellow-practitioners without prejudice effectually puts blinders on his own eyes and shuts in his own face the open door of the treasure house of revealed truth and professional good-fellowship.

The symposium known as the county medical society affords a splendid opportunity for the consideration of professional ideas and experiments. The actual benefit of monthly meetings cannot be accurately measured, for the benefit will prove to be continuous in its scope. It is not alone the whetting of one mind against another which evolves the latent spark, but discussions may develop lines of thought which one takes home with him, and, after a while, crystallizes into practical results. Then, again, mingling together at the county meetings will produce that which is so much needed in the profession of medicine, namely, the development of fraternal fellowship.—(*Medical World.*)

The Glands of Internal Secretion

The Climacterium in Women*

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As the key-note of puberty is evolution, so the characteristic feature of the climacterium is involution.

The term climacterium designates that period in a woman's life in which the specific genital functions have become extinguished.

Other terms, such as menopause and change of life are employed. Bandler suggests that there is a difference between the term climacterium and the term menopause. Menopause means a cessation of the menstruation; the climacterium means the period of transition from the most active thirty years of a woman's life to the subsequent period of comparative peace, quiet and freedom from menstruation and its associated annoyances. A woman may be in the climacterium and menstruate normally and even excessively. She may have one or the other "change of Life" symptoms long before menstruation ceases, and the annoyances may persist for months or years after the menopause.

What are the causes of menopause? The generally accepted view is that the natural menopause occurs in woman as a result of the gradual withdrawal of the ovarian secretion, and it is, of course, certain, that the artificial menopause is produced by the absence of it. The chief characteristics of the artificial menopause are abruptness and severity. The artificial menopause may be due to a mental shock, sustained by a woman comparatively early in middle life, and consequently she may cease to menstruate. Or by some operation, such as total hysterectomy, or the integrity of the internal generative organs may be destroyed. On the other hand, it has been observed in a number of the cases, that although the monthly flow ceases, the nervous symptoms associated with the climacterium, do not appear until the usual age.

This seems to be due to the fact that menstruation is really presided over by the ovaries, and possibly by some nervous mechanism connected with the Fallopian tubes, while the uterus itself is merely the organ through which the menstrual discharge is effected and the dwelling-place of the child from the time of conception until birth. This explains that the removal of the uterus, although necessarily causing the cessation of menstruation, does not in itself cause the development of other climacteric symptoms. However, the complete removal of both ovaries will not only bring about cessation of menstruation but also be quickly followed by the development of the nervous phenomena usually accompanying the "change of life". In some cases, small masses of ovarian tissue may exist apart from the organs we call the ovaries, and some of this tissue may escape removal and so permit the continuance of ordinary sexual life.

The artificial menopause may also be caused by treatment of the pelvic organs by the *x*-rays. Sometimes the destruction of the glandular tissue by the *x*-rays is so complete that a true "change of life" is brought about.

It has been the author's experience that this artificial menopause is also much more severe in its associate climacteric symptoms. It is a fair deduction that the reason for this lies in the fact that other of the endocrine glands which apparently endeavor to compensate the woman for the natural loss of her ovarian secretion, are as it were, taken unaware and do not have time to develop sufficiently to throw into the system their compensatory secretions.

The most common average age at which the monthly function ceases is between forty-seven and forty-eight. This applies to the white races living in temperate climates. The state of the general health and mode of living do also make some difference in the time of the appearance of the menopause.

Family tendencies to an early menopause are often transmitted for generations. One has seen cases where grandmother, mother and daughter all ceased to menstruate at the age of thirty-two, whilst in none of them was any disease or pathological condition of any sort discoverable. In some of these cases children may be born long after the cessation of the menses. In this connection we should also mention that one occasionally sees cases where menstruation has ceased, but under improved conditions of life it has returned after an interval of four years or more.

The following cases have been vouched for by reliable authorities:—

(A) A woman stopped menstruating at forty-nine, but was delivered of a healthy child at the age of sixty-one.

(B) A woman ceased to menstruate at the age of forty-eight after having had her eighth child at the age of thirty-three. At fifty, menstruation returned and she again became pregnant, and was delivered in due course of a ninth child who was strong and healthy.

(C) A woman began to menstruate at twenty, married, and had her first child at forty-seven, and ceased menstruating, but had seven more children up to the age of sixty.

The author called attention in a previous paper of this series, of children who shortly after birth began to menstruate.

Dr. Murray L. Brandt reports the following case which came under his observation:—A woman, forty-six years of age, began to menstruate at thirteen, was always regular every twenty-eight days, married at eighteen, and since then had eleven pregnancies resulting in twelve children. The last labor occurred at thirty-nine years of age. Following this labor the patient menstruated regularly for a year, the last occurring in June, 1916. In May, 1919, she was delivered of a male child weighing nine pounds. Incidently this child showed all the signs of achondroplasia. Ten months after the birth of the child, the patient, after weaning the baby, began to menstruate and had three normal periods. The menses have not returned since.

According to Dr. Brandt, the literature discloses only five other authentic cases of pregnancy after menopause.

All these cases prove that ovulation may continue after the menses have ceased.

In the author's opinion such is usually the case. In a number of cases in which the author made zoografts of ovarian tissue, menstruation which had been absent for periods varying from two to seven years, became re-

* This is the eighth article of this series.

established and the patients continued to be regular for from six to eight months.

After ovulation ceases much of the work of the ovaries is accomplished, and unless some morbid changes take place in them they become shrivelled and atrophied. In women in whom the menopause has long been passed, the ovaries may be shrivelled to a quarter or even a fifth of their normal size.

All the anatomical changes demonstrable in various organs at the climacteric are indicative of the retrogression which characterizes this period. As to the external genitalia, marked atrophic changes are seen in the tissues of the vulva. The fat of which the labia are so largely made up disappears almost entirely, so that they become little more than two long skin folds, so flat in many instances as to be scarcely noticeable. The hair on the outer surface become grey and straggly. As a result of the atrophy of the labia majora, the labia minora becomes relatively more prominent, as in the child, even they undergo more or less wasting. The clitoris becomes very small, the gland clitoridis being often scarcely demonstrable in the bifurcation of the labia minora.

As a result of the so-called senile atrophy, with its attendant thinning of the epithelial layer, the mucous membrane of the vulva loses its velvety, vascular appearance, and becomes thin, pale, and transparent looking, giving the surface a pasty appearance. Patches of catarrhal inflammation are often seen mottling the surface.

The meatus urinarius is often granular looking, and not infrequently is everted.

The vagina becomes narrow and contracted, the result of the same process of climacteric atrophy, in which there is a replacement of parenchymatous by interstitial tissue.

Annular lines of contraction are frequently noted, and occasionally the lumen of the canal may be almost obliterated. The fornices of the vagina become narrow and conical, the apex of the cone corresponding to the cervix. The vaginal mucosa becomes thin and atrophied.

In a previous paper of this series, the author called attention to the edema which frequently occurs in the penis and the vulva following transplantation of gonadal tissue in the abdominal wall. *In one case the author operated on, the adema of the vulva was so marked, that the patient was unable to place her thighs together for over a period of twenty-four hours.*

The relationship therefore of the endocrines from the ovary and the general atrophy of the female generative organs seems fairly well established.

As to the internal genitalia, the cervix uteri becomes very small and short. The external os, especially in nulliparous women, becomes so narrow as scarcely to be distinguishable. The corpus uteri shares in the general atrophic change. The muscular structure of the myometrium is to a considerable extent replaced by connective tissue.

The endometrium becomes thin and avascular. The glands lose their full tortuous appearance and become straight and narrow. The epithelium lining the urtricular glands, as well as that covering the surface, becomes low and cuboidal. In extreme cases it is almost flat.

The stroma, normally made up of round or oval cells, shows the presence of increasing numbers of spindle cells.

The Fallopian tubes also participate in the retrogressive processes of the menopause, becoming shorter and thinner. The fimbriae disappear, as do also the longitudinal rugae in the mucosa.

Even the mons veneris undergoes decided changes. It loses its padding of adipose tissue, the hair becomes rough and curly and falls out in spots.

The mammary glands share in the atropic processes of the remainder of the genital apparatus, they and the milk ducts, shrinking to rudimentary conditions. Hardening of the ducts and glands often leads to the suspicion of disease, and many breasts have fallen a sacrifice to the knife when the cause of the trouble was a purely physiological one. We must differentiate a physiological from a diseased condition. The fat of the breasts, in most cases, is gradually absorbed, the nipple shrinks, and the breasts become wrinkled, atrophied and are no longer objects of beauty symmetry. Not a few women, however, retain the beauty of outline of these organs to extreme age.

As regards the bladder, weakness and irritability are frequently noted. The patients sometimes have to urinate every fifteen minutes or half hour.

In the author's series of between four hundred and five hundred cases of transplantation, he has had two cases of women who wore napkins on account of bladder incontinence from which they suffered. *In both of these instances the incontinence disappeared entirely.* One of these cases was transplanted on July 12th, 1923, and has remained entirely well since. The other case was transplanted January 7th, 1925, and the incontinence remained absent until April, 1927, when she returned to have another transplantation.

The process of the change of life involves the whole organism. Fat often develops, and there is a tendency to generate more heat, which is often shown by the so-called "flushings." The suffusion may begin in the lower part of the abdomen, and spread to the chest and the face. Sometimes the heat is described as "dry," but the heightened temperature is often followed by a gentle sweating.

Excessive hemorrhage may be a symptom of the menopause. Cases of climacteric hemorrhage are explained as being due to the physiological lesion rather than an anatomical one. The disturbance in these cases involves some portion of the ductless gland chain and is due to the withdrawal of the ovarian secretion. The disturbance of the hormone equilibrium sometimes results in bleeding. The condition is analogous to that which occurs at puberty, when the ovary begins to functionate, the changed condition in the ductless gland circuit sometimes causing pathological bleeding—"the hemorrhages of puberty."

Among other symptoms, probably referable to the vasomotor system, are vertigo, faintness, palpitation of the heart, epistaxis, cold hands and feet. The above mentioned "flushes" and the "hot flashes" are the most frequent and most characteristic of the vasomotor disturbances.

The vasomotor center is closely related with the heat center or centers, and the heat flashes may be due to a coincident effect produced upon the heat centers.

Culbertson believes that vasomotor disturbances "represent an instability of arterial tension," and, furthermore, that the ovarian deficiency of the menopause causes a relative over-sufficiency of the pituitary and adrenals, thus causing a "vacillating hypertension."

A change in the menses may be one of the first symptoms of the menopause. In some women these changes are very slight; simply a period or two are skipped, and the complete menopause is established. In some cases these "dodging periods" may last for many months, or even years. These irregular periods, whether they be

scanty or profuse, may be accompanied by pain and distress.

In some cases the menses are so profuse that the term "hemorrhagia" may be applied to them. The greatest care must be taken in all such cases to exclude actual disease from the uterus and adnexa. Inspection and biannual examination may show that what was originally supposed to be simple hemorrhagia due to the menopause is actually hemorrhage from cancer of the uterus or adenomatous disease.

There are many other symptoms of which women complain during the menopause. Headache is very usual. These headaches are periodic in a considerable proportion of cases, and may be relieved either by drugs or a natural diarrhea.

There is one functional heart affection that may be regarded as almost peculiar to the "change of life." The patient suffers from severe palpitations, from dyspnea on exertion, from cardiac distress, faintness or snycopic attacks, rapid pulse (tachycardia), but has no increase in temperature, very little or no oedema of the ankles, no swelling of the hypogastric or epigastric regions, and only slight pallor of the face. These symptoms may constitute definitely recurring attacks, lasting over three or four days or a week, each attack lasting from a few minutes to two or three hours at a time.

The constitutional and diathetic affections frequently observed during the menopause are anemia, chloranemia, rheumatism or gout.

Eczema genitalium is almost peculiar to the menopause and the post-climacteric periods. It usually begins on the labia majora whence it spreads to other parts of the genitals and thighs; it is accompanied by intense itching.

Indigestion is very frequent during the menopause. Constipation is another annoying symptom. Where the woman suffered from constipation before the menopause, the constipation may become greatly aggravated after it.

The process of the "change of life" involves the whole organism to a greater or less extent. There is a change in the complexion; hair frequently appears on the face; the hair of the head may come out in bunches; the voice becomes gruff.

Already at the beginning of the menopause, the majority of women suffer from troubles which are comprehended under the name of functional deficiency phenomena, and which affect the whole system.

The potentia coeundi remains during the menopause, while the libido wanes gradually, though in some cases it may be increased.

Owing to the cessation of the menses in connection with abdominal adiposity, climacteric women sometimes suspect that they are pregnant. Menstrual disorders including uterine bleeding, are often observed in connection with derangements in the function of the thyroid. It is suggestive that functional uterine hemorrhage is noted most frequently at puberty or at the menopause, when endocrine equilibrium is most unstable. The awakening of ovarian activity at the pubertal epoch and its cessation at the menopause may be suspected to disturb the delicate endocrine balance so necessary to normalcy.

After the onset of the menopause the whole ductless system is involved. If increased ovarian activity acts upon the thyroid, and the latter activates adrenalin, and both together restrain the pancreas, and if the pituitary also participates in this syndrome, then absence of ovarian function may interfere with all the others. Clinical observations show that either hypo or hyper-function may occur. This explains the variety and diversity of the symptoms of the menopause. The cause of the many contradictory manifestations observed during the menopause is to be found, aside from the ordinary functions between the ductless glands, in the constitution, in congenital potentialities, to previous activity, or to local or general disease.

A weak thyroid may have become exhausted by former excessive ovarian activity, or degenerated from lack of proper stimulation. The result will be hypo-thyroidism with myxedomatous symptoms. Or the reverse may occur:—the thyroid has become excessively sensitized by repressed activity, and, consequently, explosive material has accumulated. Moreover, the thyroid activates adrenalin, and we may witness a vasomotor turmoil with hot flushes, palpitation, high blood-pressure and a host of other alarming symptoms.

Gradually a transition from hyperthyroidism to hypothyroidism takes place through exhaustion of function. We observe apathy, puffed eyelids, swelling of the hands and feet, and arthritic pains. Low blood-pressure and chilblains indicate insufficiency of the adrenals.

The mental and emotional changes observed during the menopause are sometimes more striking, wide-reaching and disagreeable than the physical alterations.

Mind and body influence one and other at every period of human life. Thus it is not to be wondered at that during the period that these important changes are going on in a woman's organism, we observe psychoses and other mental disturbances of various kinds and often of a serious character. *That these are directly due to the loss of ovarian secretion and possibly the inability of other glands to properly compensate for the sudden withdrawal of the ovarian endocrines has been proved conclusively to the author's satisfaction from his series of ovarian transplantations in which instances of thyroid hypo and hyper secretion have been relieved within one to three weeks following transplantation of ovarian tissue.*

Periodic waves of augmented sexuality may become manifests, there may be attacks of increased libido, and the aged widow or elderly spinster will marry a worthless young scamp. The result of such marriages are almost always disastrous. Women, who formerly led blameless lives, become eccentric, unreliable and evince tendencies to erotic elusions and dissipations. Alcoholic excess is a common psychopathic disorder of the climacterium.

Jealousy, or the suspicion of the husband's infidelity, may drive a climacteric woman to seek consolation in the glass or in another man's embraces.

During the "dangerous age," acts of violence and destructiveness are quite common. A climacteric woman may implore strange men to co-habit with her and should this request be refused, the woman may accuse her victim of immoral proposals.

Erotomania, or excessive amorousness, which is rarely accompanied by a strong sexual desire, is a common condition at the menopause. Erotomanic women are wont to speak of their "Heart-hunger," their yearning for a "twin-soul," or a "spiritual affinity". If married they speak of their husbands as "soul-less," or "unable to understand a woman's deeper nature." The erotomaniac describes normal sexual feelings as "lust" or "a low appetite."

Nymphomania, so often encountered in climacteric women, is a psychosis manifesting itself in an overpowering libidinous impulse. Assaults and criminal offenses are sometimes committed by nymphomaniacs.

The author has one of these cases in which he has transplanted six times during a period of four years. This case is quite normal following transplantation for

(*Concluded on page* 143)

The Living Engine from the Engineer Point of View

WILLIAM G. H. BREHMER, M.E.
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In looking over the history of scientific pioneering it is interesting to note the extent to which the various branches of science are indebted for their fundamental discoveries to workers in other fields. Thus, the function of the heart was stated quite clearly by the artist-engineer, Leonardo da Vinci, a full century before Harvey announced his epoch-making theory of blood circulation. Indeed, it is related that Harvey himself did not flow in the case of our most advanced living engine—the human organism. It is the common experience of the engineer that improvements in the design and operation of power machinery depend upon a better understanding of the energy-characteristics of the driving media. In the case of the living engine it would seem even more important to view the mechanism in terms of the "stream" of energized media which "drive" it, so to

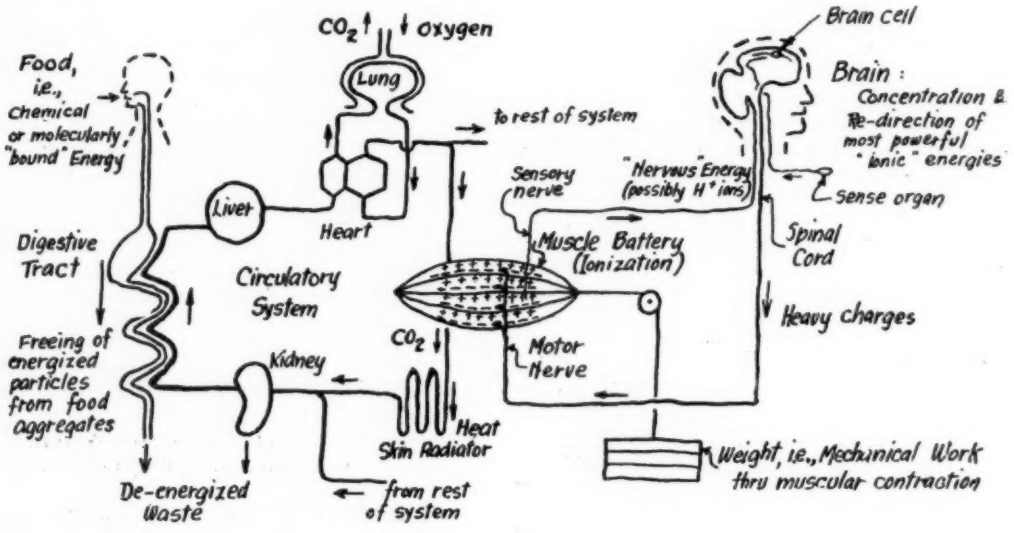

Diagram outlining Flow of Energy thru Human Organism

grasp the significance of the "check-valves" in the circulatory system until a friend whom we would now class as an engineer, suggested their real purpose. Again, it seems to have been the architect of St. Paul's, Sir Christopher Wren, who first succeeded with intravenous injection; while the clergyman, Hales, was the first to measure the blood pressure.

On the other hand, it seems that the physiologist, Mayow, discovered atmospheric oxygen a century before the experiments of the minister Priestley and the chemist Lavoisier. And the obscure physician, Mayer, deserves great credit in connection with laying the scientific foundation of our vast modern developments in power engineering.

The writer does not feel, therefore, that he is taking undue liberties in suggesting an interpretation of the intimate nature of the Life Process from the viewpoint of the engineer. Indeed, it is his belief that the engineer with his constructor training and experience, especially in the field of applied Energetics, might help greatly in the formulation of basic principles of vital dynamics which the bio-scientist, eager to establish new experimental and statistical facts might overlook.

To illustrate the engineer method of approach to the intricate problem of the living organism let us refer to the accompanying diagram. Obviously, this is not an anatomical drawing. It is rather an "energy-flow" diagram. The purpose is to establish *thru*-lines of energy-speak. For this driving stream plays an essential part in the actual building-up of the living organization. The peculiar, encompassing value of this energy-stream viewpoint, which includes both the objective mechanism and driving force in the same consideration, will become more apparent as we develop the cycle of energy transformations by which the organism is customarily said to "live".

Beginning at the left of the diagram we observe that the organism absorbs energy from the environment in the form of foods. This energy is in the so-called chemical form. It is molecularly bound—wrapt up in complex aggregations. Before it can be of any use to the organism it must be released from the bound condition. The liberation of the energy-bearing constituents from the conglomerate food stuffs is begun in the digestive tract. While the complex process of digestion is of great importance to the physiologist, we need not dwell upon it at great length for our purpose. Suffice it to note that those energized constituents best suited to the needs of the organism are prepared for absorption into the blood stream.

After the blood leaves the digestive tract with its supplies of new energy-bearing media it passes thru the Liver. It is then pumped in two stages by the heart—thru the lungs in the first stage, thru the entire system in the second stage. The processes which take place within the liver and the lungs are of great importance. But for the purposes of this presentation it will be more

satisfactory to refer to them after we have taken up the critical energy transformations which occur within the neuro-muscular system.

Manifestly, so long as the energized particles acquired by the blood from the digestive organs remain in this watery stream, the energies which they convey exist in a random, uncoordinated state. We must try, therefore, to trace the process by which the dilute, random energy stream is concentrated and classified for various uses by the organism.

As an approach to this problem let us investigate the widely-distributed muscle tissues from the viewpoint of basic energy changes. To begin with, we know that a muscle consists of a number of bundles of extremely long, fine fiber-cells. In virtue of this type of structure, the muscle must possess a tremendous amount of surface energy. Now, it is well known that the interfacial surfaces of liquids and colloidal structures tend to develop high concentrations of dissolved particles and also of electric charges. In fact, it would seem, from the mode of reasoning so effectively used by Williard Gibbs, father of physical chemistry, that the tensile energy of a boundary surface would be able to effect a higher degree of ionization than would occur within the body of a globule or colloidal aggregate. In any event, ions of like sign repel each other while ions of opposite sign attract each other. Hence, the ions absorbed by, or liberated within an interfacial surface tend to arrange themselves in the form of a so-called double layer, i. e. a layer of positive ions on one side, and a layer of negative ions on the opposite side of the surface.

In view of the foregoing considerations it would seem that the muscle-complex is peculiarly fitted, first, to absorb a high concentration of the energy-bearing media of the blood; and, secondly, to facilitate the segregation of high concentrations of oppositely-charged ions. Such alternate and opposed ion concentrations, though considerable in total amount, would obviously be so diffused throughout the muscle structure as to render experimental detection in situ very difficult.

Thus, we see that from the energy view-point, the muscle appears to be a group of minute primary electro-chemical cells. To make the individual cells function together properly, and also to make the muscle function properly in relation to the rest of the organism, a co-ordinating mechanism is needed. This leads us to the consideration of the central, co-ordinating nervous system. But before proceeding to this consideration we must first deal with certain peculiar features of the muscle batteries.

In the first place it must be evident that the high adsorptive power of the cell surfaces would cause the muscle to retain a considerable portion of its ions. This tendency would be greatly increased by reason of the mutual electrostatic attraction between the alternate layers of (+) and (—) ions. Hence, the muscle battery would differ greatly from a simple electro-chemical cell in that it would retain most of its ionized energy unless the equilibrium between the opposed ions were radically disturbed in some way.

Now, we know that the muscle is capable of strong contractile effort, i. e., the "plates" in the muscle battery are capable of marked self-deformation. Ordinarily they are, of course, extended to moderate lengths and in a relaxed condition. This extended condition might be accounted for by the fact that the (+) ions along one side of the membranal surface repel each other, while the (—) ions on the opposite side also repel each other in the same direction. This mutual self-repulsion between the ions of each set would strongly oppose the surface tension inherent in the long, elastic fibers. Hence, the muscle would be ordinarily relaxed, or at least in that peculiar condition of unstable equilibrium which we call "tonus." Yet, a very minute current of so-called nervous energy coming down the motor nerve can cause a violent contractile spasm. How can we account for this peculiar property of the muscle-battery?

Now, we get something of a clue to the intimate nature of the intra-muscular processes from the structural characteristics of the nerves connecting the muscle to the central nervous system. One of these nerves, the sensory or afferent nerve, is of very light construction with fibrillar endings in the muscle. The other, the motor or efferent nerve, is of heavy construction and its endings are well-defined plate-terminals on the separate bundles. Incidentally, it would seem that the primary purpose of the membrane which sheathes each bundle is to electrically insulate the bundle. In any event, the sensory nerve is evidentally designed to carry a thin stream of energy away from the muscle, the motor nerve to convey relatively heavy charges into the muscle.

The above considerations lead us to suspect that the peculiar properties of the muscle-battery are due to the fact that one of the ions which it partitions off is an extremely small, migratory one. It might be the tiny hydrogen ion. The other ion is a much larger one. Perhaps it is a carbohydrate aggregate. In any case, it is held captive within the muscle complex. Naturally, it exercises a strong hold on the smaller (positive) ion. But the latter can extricate itself from the muscle-maze. And the continual "pressure" of ionizable particles brought to the muscle by the blood does crowd a certain number of the small, elusive (assumed) (+) ions out of the muscle, along the sensory nerve into the highly-adsorptive brain. Study of the brain tissues leads to the belief that they possess adsorptive capacity of very high order —perhaps the highest of any tissues in the body. The idea that the brain is being continually supplied by the muscles with the most highly-energized particles which can be separated out of the crude food conglomerates, is therefore not illogical.

We may well pause here for a moment to note that experimental study of the muscle from the objective viewpoint has given us rather limited information as to the actual processes which enable the organ to function as a contractile mechanism. But study from the energy view-point, while admittedly quite speculative in the early stages, does give us a new and valuable mode of attack. Thus, the concept of the muscle as a primary "generator" of ionic energy may enable us in time to clear up the uncertainties which surround the entire subject.

If our conclusions to this point are reasonably correct, at least in the germ, then the muscular system of the organism is continually sending minute "streams" of the most active ions into the brain via the sensory nerves (except possibly during periods of deep rest). Thus, the brain would become charged, let us say positively. The muscles would become negatively charged. Neither of these states of electrification would assume large proportions from the electrician's point of view. Nevertheless, they would initiate certain tendencies. For example, the charge accumulating within the brain would tend in time to break through in some way or another. On the other hand, the muscles would become susceptible to the receipt of return charges down the motor nerves. Apparently, the whole structure of the nerve-circuits between affector and effector sides is designed to effect conversion of thin, diffused receptor currents coming from the entire organism into heavy discharges directed down par-

ticular groups of motor nerves in ever-varying combinations.

Now, ignoring for the moment, the part played by the sensory organs and the brain itself, let us suppose a heavy charge of (+) ions is directed down the motor nerve of a muscle, as shown in the diagram. Such a charge, however slight, would radically alter the state of equilibrium between the (+) and (—) ions within the muscle, especially in view of the strong tension in the cell-surfaces. For example, it might well initiate rapid re-union of these ions in somewhat the same way that a minute electric spark introduced into a mixture of gases obtained by the *slow* process of electrolysis will cause these gases to re-unite explosively. Sudden reduction in the number of free ions causing the muscle to relax would permit the inherent surface tension to assert itself. Hence, the muscle would contract. Thus, the generalized process of ionic dissociation occurring throughout the entire organism could be used selectively through the agency of the central nervous switch-board, so as to enable the organism to react to environmental circumstances.

It would seem, of course, that the myriads of sense organs throughout the entire system are also minute electric "generators." In the eye, the elemental cells are photo-electric, in other organs they are chemico-electric, or thermo-electric or piezo-electric, etc. A typical sense organ and its nerve are shown in the diagram.

Finally, and riding above all others, the myriads of brain cells must be minute electric batteries. Though the currents which they generate are most minute, these cells are located at the strategic center where all the body currents converge. Direction and control of all the processes within the organism therefore reside in them. They are the switchboard operators in the human power-plant.

It seems that the organization of the brain cells is very susceptible to modification by the flow of energy through them. It is well known, of course, that the flow of energy through a complex medium may modify its conductivity. In the case of living cells, and especially the brain cells flow of energy seems to so modify cell function that repetitions of flow occur with increasing ease —at least before senescent disorganization sets in. This tendency toward repetition of energy-flow due to improved conductivity might well be the physico-chemical basis for habit formation, memory, ability to select new experiences, etc. Thus we may, in time be able to explain with great precision the entire gamut of organismal behavior in terms of the inter-reaction of an ever-varying "stream" of energized quanta absorbed from the environment and the mechanism in process of building by the "pressure" of this stream.

It is well known that all animal organisms, a few border-line cases excepted, depend upon oxygen for the maintenance of vital functioning. We are now ready to consider the part played by oxidation in the bodily economy, and by the heat developed as a by-product of oxidation. We have already noted how muscular contraction could be effected by sudden reversal of the ionization, which occurs normally in muscle tissue. But such reunion of ions would leave the muscle unable to relax quickly and to repeat the contraction unless the by-products of the reaction were removed at once. From the Energetics view-point these products would be less easily ionized than the original substances brought to the muscle by the blood. Unless this were so the muscle could simply re-ionize the products of contraction and perform mechanical work through use of the same energy-bearing media over and over. This would amount to creation of energy—something that no mechanism, whether living or non-living has ever been observed to do. Obviously, the by-products of muscular contraction must be quickly removed.

It may well be that the primary function of oxygen is to break up these products rapidly and completely into simple substances that may be swept away in the blood stream. Experiments have shown that a form of lactic acid is one of the chief products of muscular contraction. Furthermore, this substance is known to produce muscular fatigue. The fact that it is broken up into CO_2 and H_2O might well account for the need of oxygen so far as physical activity of the organism is concerned. Possibly this action is greatly accelerated by reason of the intimate contacts brought about within the very thin, taut surface-films of the muscle cells. That is, the interfacial surfaces might play the rôle of catalytic agents. In any case, the oxidation process is apparently necessary for the maintenance of the primary chemico-electro mechanical transformations previously described, at a high rate of continuity.

Obviously, the heat developed within the organism by oxidation represents rapid degradation of energy. It is to be noted however, that the living engine apparently utilizes its energy supplies in the electrical and mechanical phases *before* the degradation into heat occurs. This is most important from the Energetic's point of view. Because electricity so-called, or electrical quanta if you prefer, represent the purest, most concentrated most active form of energy known to us. Electrical processes and machines are most efficient. On the other hand, heat is a diffused form of energy which can be re-converted into other forms to only a limited extent. Heat engines are therefore invariably inefficient. Therefore, the Energetics view-point sustains the belief that oxidation in the living engine occurs *after* the original supply of chemical energy has been converted into the electrical phase and this, in part, into the mechanical phase as muscular contraction.

The same mode of reasoning sustains the belief that the brain is primarily the focal center for the convergence and interchange of the most active ions separated throughout the entire organism from the food supplies. We may readily understand, from this point of view, how the 3-pound brain can control the activities of the 150-pound man, or the destinies of a nation.

Now, it happens that most electro-chemical reactions are accelerated with rise in temperature. Rise in temperature can be effected within the organism by conservation of the heat developed as an accompaniment to oxidation. Such energy conservation represents a vast improvement in operating economy. It is not surprising, therefore, that the warm-blooded mammals which utilize otherwise waste heat energy in a truly regenerative manner, enjoy the leading position in the procession of terrestrial life.

The cycle of energy transformations above described is completed with the aid of various auxiliary organs. Thus, the CO_2 formed within the muscles is exhausted to the atmosphere through the lungs which are also the port of entry for the life-sustaining oxygen. The heat of oxidation and the H_2O are dissipated through lungs, skin and kidneys. The latter organs also take care of the disposal of cellular debris. The liver which is a primary store-house and digestion-regulator also seems to play an important part in the maintenance of the electrical processes by which the organism "lives." And so on.

Ordinarily we say the blood is pumped through the organism by the heart. Yet, there is a possibility in the light of this energy view-point that the heart is not merely a pump in the mechanical sense. It appears to

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The Mortality and the Morality of Prohibition Enforcement

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The ordinary mind in the contemplation of public evils real or imaginary rarely is able to grasp the problem to an extent that reaches beyond the passage of a law making them crimes or misdemeanors. Therefore we have an average of more than 14,000 statutory laws a year—Federal and State—each designed to inculcate piety in sinful humanity by the inhibition of about everything conceivable. Thus we have statutory laws regulating the extent to which ash cans may be filled; laws regulating the length of women's skirts; laws requiring flappers to wear their goloshes laced when in public places; laws forbidding throwing food to wild birds; laws forbidding the use of lip sticks; laws forbidding the teaching of the evolution philosophy; and laws by the tens of thousands regulating every possible phase of human conduct. The notion that humanity may be divested of the desire to do evil and vicious things is not new. About five thousand years ago our good friend Moses introduced the seventh commandment into his excellent code of morals; and, of course, that put an end to a very naughty habit.

Latterly we have had a law that for the greatest possible effect has been made a part of the Federal Constitution. It forbids the manufacture and sale of beverages having an alcoholic content of more than one-half of one per cent. The design of the law was to put an end to the consumption of alcoholic beverages; and while the sale of such beverages is made a crime there is nothing to bar or to penalize the purchase of them.

General Andrews claims that he has very materially checked the importation of liquor. It is quite true; he has. Rum Row has well-nigh disappeared and the smuggling of liquor across the borders has received a decided check. The family still and the concoction made from renatured denatured alcohol have taken their place —with a trail of deaths from poisoned alcohol now almost equalling yearly the total deaths from alcoholism in pre-war days.

Has the law with its administration costs of $40,000,000 a year cured humanity of its thirst? Mr. Wayne B. Wheeler says that it has, and that prohibition is a great success in an economic way. Let us look at it from a moral point of view. Does the flask in the hip pocket of the student conduce to morality? Does the illicit traffic of liquor ranking now about the fourth industry in the nation conduce to morality? Are the private clubs which now outnumber the one-time saloons any more moral than the saloons? Does a speakeasy conducted by the Prohibition Bureau for the purpose of trapping liquor sellers add to the morality of the problem? And does the poisoning of industrial alcohol, with the full knowledge that it will kill, add to the moral effect of the law? Finally, has the law checked or even lessened the consumption of alcohol?

Putting aside the statistics of arrests for drunkenness in the large cities and the crimes associated therewith—they are inconclusive—let us review the statistics of deaths from alcoholism; and inasmuch as these do not include the deaths from alcohol poisoning they reflect fairly well the case of the drinking habit now and in pre-prohibition times. The following figures of deaths from alcoholism are taken from the mortality statistics of the Federal Bureau of the Census, in rates per hundred thousand of population. They therefore are independent of changes in the totals of population:

1900	6.4	1914	4.9
1901	6.0	1915	4.4
1902	6.1	1916	5.8
1903	6.7	1917	5.2
1904	6.5	1918	2.7
1905	6.2	1919	1.6
1906	6.4	1920	1.0
1907	7.3	1921	1.8
1908	5.0	1922	2.6
1909	5.1	1923	3.2
1910	5.4	1924	3.2
1911	4.9	1925	3.6
1912	5.3	1926	3.9
1913	5.9		

An interpretation of the foregoing values is not difficult, but a better understanding may be had by grouping them in five year periods:

1900-1904	6.2
1905-1909	6.0
1910-1914	5.3
1915-1917	5.1

The reason for making the last group three instead of five years is due to a serious change in affairs. The World War was reaching a climax and more than two million men were overseas. This fact, coupled with the upsetting which the nation suffered in consequence of the war reduced the consumption of hard liquor and consequently the death rate from alcoholism. Certain it is, too, that the pandemic of the influenza cheated alcoholism of some of its victims. The year 1918 was not, therefore, a normal year in liquor consumption. On the year following the Volstead law became operative. The average of the four periods noted are conclusive in one respect—namely, that a gradual falling-off of liquor consumption was taking place, resulting in a lowering of the death rate therefrom—6.2 to 5.1 per hundred thousand of population. In the mean time the registration area had been very materially increased, but even when the analysis is confined to the original 24 States thereof, the proportions remain practically the same.

The Volstead law became operative in 1919, and from the sharp drop it is evident that, for the time being, it was effective. The saloons were closed—possibly for all time. In 1920 the death rate from alcoholism had dropped to the lowest point that it had ever reached. Did it remain there? The figures for the succeeding years in the registration area, 38 States, including about ninety per cent of the total population answer for themselves. The rate for 1926 is provisional and is subject to correction—but it will not be materially changed.

The cases of the States present even stronger evidence that liquor consumption is increasing if it is measured by death rates from alcoholism, not including those due to methyl or wood alcohol. Here are a few instances, and in every State from which records have been obtained there has been a marked increase from 1920 to 1925; Florida, from 1.9 to 4.33; Colorado, from 0.7 to 3.7 in 1923; Kentucky, from 0.4 to 2.5; Maine, from 1.3 to 2.6; Kansas, from 0.7 to 0.9; Maryland, from 0.7 to 6.7; Massachusetts, from 1.8 to 7.2; Michigan, from 1.5 to 5.9; New York, from 1.7 to 8.0 in 1926;

Rhode Island, from 1.3 to 7.8 in 1924. And in not a single State from which reports have been received is the death toll from alcoholism less in 1925 than in 1920.

Cirrhosis of the liver is usually regarded as a result of alcoholism; and, should one tabulate the statistics of deaths therefrom, the figures would show about the same increase. With the rates increasing as they have in the past six years, the year 1928 will see the death toll of alcoholism back to pre-war figures.

Mr. Wayne B. Wheeler has shown that the bank deposits of wage earners have steadily increased and that they live better since the Volstead law went into operation. That is quite true. And granted that all their prosperity is due to prohibition, he might have added that they are dying from alcoholism and alcoholic poisoning quite as rapidly as in pre-prohibition days.

Let us admit that the Volstead law cannot be dissociated from a certain amount of financial prosperity; will the economic gain offset the moral degradation, crime, and suicide of character that the illicit traffic in liquor has brought about?

Meteorological Laboratory,

The Clinical Significance of the Acetone Breath

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In these days of multitudinous urinary and blood analyses, the general practitioner who is relatively devoid of the ready facilities of laboratory work, while making efforts to keep up with medicine, in general or specifically, is somewhat abashed by the apparent necessity of having at his disposal means for testing the blood for the CO_2 combining power, alkaline reserve, sugar, etc., and the urine for beta-oxy-butyric acid, acetone or diacetic acid, when he appears to be encountering the much discussed symptom-complex of acidosis. Our general tendencies have been thru occupation in other directions, to consider the laboratory the *sine qua non* in acidosis.

We feel it would be of service to recall to our attention the clinical presentation in a patient suffering with the discussed entity and to emphasize the significance of the presence of an acetone breath.

During the past four or five years, we have repeatedly checked the relationships of both the acetone breath with the urinary findings and the acetone breath with the findings of the CO_2 combining power in the blood. It may seem a rather broad statement to make, but at no time have we failed to find in the urine either a positive diacetic acid or acetone test, or both, when the patient has presented the acetone breath. In addition, the presence of the acetone breath, when checked by a simultaneous blood CO_2 combining power analysis, has always shown a greater or less reduction from the normal reading.

The presence of an acetone breath, *per se*, certainly does not tell us necessarily the degree of acidosis that is present, but the presence of the breath, taken in conjunction with the degree of dryness of the tongue, as well as the degree of redness of the tongue, the latter approaching as we know the beef-red, markedly dry tongue of impending coma, can certainly afford us a rather good clinical estimate of the degree of acidosis presented.

If any definite statement can be made in relation to the breath, it is certain that the detection of an acetone breath indicates the presence of an acidosis.

A word of caution, however, must be given in relation to the acidosis of nephritis, in which condition we are dealing with an acidosis due to the retention and accumulation of acid phosphates in the blood. In this instance there is not the presence of acetone on the breath nor a ketosis unless there is an associated causative factor, in conjunction with the nephritis, for the acidosis we most commonly meet, such as starvation, diabetes, post-anesthesia, emotion, shock, etc.

Another practical significant factor in relation to the finding of the acid bodies in the urine is that almost invariably the urine is acid in reaction, although in an exceedingly small, almost negligible percentage of cases, it is possible to find an alkaline urine with the presence of the ketones.

Upon most infrequent occasions exceptions are to be noted to the above mentioned statement that the acetone breath indicates an acidosis, insofar as it is possible to have the clinical symptoms of an acidosis with the acetone breath, diacetic acid and acetone in the urine, with the blood presenting an elevated CO_2 combining power, indicating the most contradictory combination of acidosis with the blood findings of alkalosis.

580 Park Ave.

The Living Engine

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be rather a booster check-valve in the sense that it is to some extent "driven" by active agencies in the blood stream itself. Thus, we might almost say that the blood stream, by virtue of certain energized constituents within itself raises its own pressure level in part, through the agency of its own motor-pump, the heart.

We have now sketched out—all too imperfectly to be sure—the apparent course of the life--sustaining energies through the human engine. Very likely this presentation contains certain errors of interpretation. Yet it has at least this basic virtue, that it enables us to visualize the organism in its entirety not alone from the outside in, but also from the inside out, as it were. This reminds one of exploring a deep, tortuous canyon by riding down the "generating" stream in a boat, as well as viewing it from such external points of vantage as can be found. No matter how much information you could get from the outside, there would still be certain important information which you could obtain only by "getting into the stream."

In any event, this analysis is humbly offered as a suggestion that we may, by giving more attention to the *energy* aspects of the organism, eventually answer the great question, "What makes it go?"

Our Leper Hospital

Among the many up-to-date features of the United States Government Hospital at Carville, La., where all the lepers of the United States are isolated and undergo treatment is the maintenance of a model dairy herd to furnish milk and butter to the patients and employees at the institution.

Sweden inaugurates health campaign with bath for every child in public schools.

Photo shows Dr. Alfred Adler, noted psychiatrist of Vienna.

Correspondence

A Comment on Dr. Loewe's Paper

To the Editor of THE MEDICAL TIMES:

I was very much impressed by the article of Walter R. Loewe, M.D., on "Malingering as a factor in negligent action examinations."

Dr. Loewe speaks from the standpoint of the physician, hired by an organization, for the purpose of saving as much as he can for the treasury of that organization. There is no doubt that in his capacity Dr. Loewe has had frequent occasions to notice the great amount of discrepancies which exist between the opinions of the patient's physician and the physician employed by a company. Each one approaches the subject, to a great extent, from his own angle, influenced not only by the attitude that he has in such matters, generally, but also by the fact that his livelihood depends a great deal upon the opinion that he is going to express. Of course, in a frank case of injury, the only divergence of opinion will be as to the amount of his ability. The company's physicians, are as a rule, unsurpassed experts in determining the amount of disability within one tenth of an inch. To them a person is 10 per cent, 11 per cent, or 22 per cent disabled. Such wonderful ingenuity is a direct result of the workings of our compensation laws. However, let us go over and see how the present compensation law works.

The patient is required to notify his foreman or employer immediately after the accident has occurred. The employer notifies the company. A number of blanks are filled out by each party. The patient is then sent to a physician, as a rule, one specially designated by the company. Payments are done by the company under the direction of their physicians. The patient is required to appear to numerous hearings, if he intends to collect more than the company's physician directs. The company is represented, at each hearing, by a lawyer, by a physician. The patient, on the other hand, is represented occasionally by a physician of his own selection (a physician who is usually in a hurry to return to his office). From personal observations, the interests of the patient are not the paramount concern of the compensation board. The attitude of the company is generally one of paying as little as they can, of bulldozing the patient in accepting a settlement.

In cases of so-called traumatic neurosis, the patient is invariably taken as a malingerer. A settlement of his claim may last somewhere between one year and eternity, and irrespective of the number of experts who may testify in behalf of that patient, it is the Insurance Company which wins at last.

As far as the compensation cases are concerned, it is my opinion that any physician with self respect and professional standing will, as a rule, refuse to have any dealings with such cases. Leave aside the amount of time that the physician may lose; leave aside the numerous blanks and tremendous correspondence which takes place, but the Insurance Companies, also, nine times out of ten "beat him down in his bill." And who are experts employed by Insurance Companies? What are their standards? As far as the general treatment of such cases is concerned, the Insurance Companies have established medical offices (some of them in their own buildings), where the patient is directed to go. The great relationship between the patient and physician is lost. The patient is case number so and so, and he is treated as a case, but not as a patient. And, by the way, these companies are practicing medicine against the law. They cannot show that the doctors they employ are selected according to a certain standard of efficiency, or certain special training or qualifications. It is mostly a case of the adjuster selecting the physician, and a thorough investigation of this fact would reveal some shocking state of affairs for the benefit of the companies and the patients.

As far as other accident cases are concerned, it has been my experience that it is the company at fault if malingering takes place. The company's physician approaches the patient to be examined with the suspicion that the patient is a malingerer. His attitude is never friendly; the questions he asks are, as a rule, very intricate. He has more the air of a detective than that of a physician. He never admits that there is such a thing that he may be mistaken, and from one single examination, usually months after the accident, he claims to be able to tell all that there is to know about the case. I am speaking, here, from the standpoint of the neurologist, and we only know too well how little neurology the company's physicians usually know.

To the few examples given by Dr. Loewe in his article, I could add many more where the company's physician, and experts, were, as a rule, mistaken. His example of the woman who suffered from lues, I may say, that in my experience an accident may be responsible for the appearance of tabes dorsalis, general paresis and other luetic conditions. Such cases have been known and the courts have decided in their favor. It would be dangerous to leave to physicians and experts hired by companies, with a tremendous capital behind them, to decide such important questions as the disability of a person after an accident.

The suggestion of Dr. Loewe, that the court appoint physicians for the purpose of examining a patient, should be encouraged only with a condition that that physician should be selected by both parties concerned, and that his report should not be binding on either party, for, you cannot deprive an individual of his right to a trial.

In conclusion I wish to say, as far as compensation cases are concerned, that the greatest misfortune of the present day laborer is the fact that private insurance companies have the right to decide his disability, and that they are permitted to direct the patient to certain doctors in the employ of the company.

Yours very truly,

L. GRIMBERG, M.D.

New York, May 5, 1927.

The Pneumonia Ratio

From 5 to 10 per cent of all deaths in the United States are due to lobar pneumonia.

The Physician's Library

Textbook of Biological Chemistry. By James B. Sumner, Ph.D., Assistant Professor of Biological Chemistry, Cornell University. 283 pages, 6 illustrations and an index. The Macmillan Company, New York, 1927.

Professor Sumner has produced a book perfectly adapted to the requirements of the elementary student; in other words it outlines as briefly and simply as possible the principal facts and theories of biological chemistry. But the practitioner who wishes to get a better grasp upon biochemical fundamentals as they relate to present-day medicine could not do better than to read such a book as this, for therein he will find in succinct form all essential data relating to such matters as the constitution and metabolism of the fats, carbohydrates and proteins; the vitamins; energy requirements; constituents of urine and their metabolism; the blood and respiration; physiological decoxications; enzymes; and the physical chemistry of protoplasm. An understanding of these things is essential in present-day medicine and this book will supplement or fortify one's store of such useful knowledge.

The Conquest of Disease. By Thurman B. Rice, A.M., M.D., Assistant Professor of Sanitary Science, Indiana University School of Medicine. 363 pages. The Macmillan Company, New York, 1927.

Dr. Rice's book imparts a glamour to the story of preventive medicine which should win many readers, and as a consequence enlist more intelligent supporters of public health measures. The battles against and the victories over the transmissible diseases are chronicled from the romantic, yet none the less realistic angle, in other words in such a fashion as to enlist the interest of the public, medical and lay alike. The author has succeeded surpassingly well in the writing of a book calculated to intrigue the general reader, an essential objective, since "complete conquest of the transmissible diseases waits as much upon the intelligent appreciation of the facts by the laity as it does upon the advances in research made by the medical profession." There are a number of illustrations suited to the text and an index. It's a good story.

A Textbook of Exodentia, Oral Surgery and Anesthesia. By Leo Winter, D.D.S., Professor of Oral Surgery, New York University College of Dentistry, etc. 364 pages, 329 illustrations and an index. The C. V. Mosby Company, St. Louis, 1927.

This is an excellent presentation of exodontia which should aid the surgeon in many ways as well as the dentist. The subject of general anesthesia is dealt with most ably by Dr. James Tayloe Gwathmey while that of local anesthesia is covered with completeness by Dr. Winter. Technical methods of every type employed about the jaws by oral surgeons are fully elucidated and the treatment of all possible accidents or untoward events is clearly described. The sections dealing with extractions are particularly well presented. The illustrations are of a high order of excellence. The work as a whole merits praise and is a fine example of book making. It should take high rank in its special field.

A Text-Book of Surgical Handicraft. By J. Renfrew White, Ch.M. (New Zealand), F.R.C.S. (England), F.A.C.S., First Assistant to the Professor of Surgery, Otago University, New Zealand, Assistant Surgeon, Dunedin Hospital, New Zealand, etc. 576 pp. and index; second edition. The Macmillan Company, New York, 1926.

This admirable volume on surgical handicraft aims to assist the student in grasping the underlying principles of a hospital's routine work, although it will be found an excellent aid by the entire guild of surgeons, since it codifies and expounds the essential details of surgical handicraftsmanship in an exhaustive manner. The work consists of seventeen chapters and five appendixes and is profusely illustrated. The subjects covered are asepsis and antisepsis, sterilization, surgical materials, bandaging, strapping, hemorrhage, knots, ligatures, sutures, preparation for operation, operative technique, post-operative care and treatment, the treatment of all types of wounds, and the uses of heat and cold in surgical practice. The appendixes discuss such subjects as weights and measures, position during operation, enemata, injections, mercurorchrome, gentian violet, the preparation of catgut and silkworm gut, use of hypertonic saline solutions, hemorrhage from a tooth socket, fixation of dressing after thyroidectomy, etc.

Out of such a mass of finely presented material it seems invidious to single out any particular section for special praise, but we are especially impressed by that on knots, sutures and ligatures, which it would seem impossible to improve upon.

The world's debt to American surgery is plainly to be noted in this work, since many methods and procedures of such origin are described. There is much material, for example, derived from that masterful treatise, Warbasse's *Surgical Treatment*. This is a matter that should occasion some natural pride.

We consider White's book an indispensable item in the surgeon's library.

"This Business of Operations." By James Radley, with foreword by J. M. Withrow, M. D., Chief of Staff, Christ Hospital, Cincinnati; pp. 96; The Digest Publishing Co., Cincinnati, 1927.

Physicians can recommend this little book to their patients for several reasons. It will warn them against procrastination in seeking medical aid for seemingly unimportant ailments. It will overcome for them the dread of the hospital and all that goes with it—when surgery has once been decided upon—and it will help them to understand and appreciate many of the things that the hospital is doing for them. Physicians and nurses, of course, do not need the advice and comfort that is offered the layman in this book, but they can and will appreciate the tribute paid their professions by the author in such a whole-hearted, generous style, sprinkled here and there, as the title would suggest, with bits of humor.—L. G. Bodkin.

Four Thousand Years of Pharmacy. By Charles H. LaWall, Ph.M., Phar.D., ScD., F.R.S.A., Professor of Theory and Practice of Pharmacy and Dean of the Philadelphia College of Pharmacy and Science, etc. 64 illus., 665 pages. J. B. Lippincott Co., Philadelphia and London, 1927.

Although the title of this book would seem to mark it as literature of interest only to pharmacists, it proves instead to be one of the most complete, and certainly the most readable outline of the inseparable histories of medicine, pharmacy, and general science. LaWall is well qualified to discuss the scientific subjects that come within the scope of the book. He has gathered together a tremendous wealth of information regarding the earliest usage of drugs and the history of their application. His sources of information are authentic and often first-hand, as is evidenced by illustrations and photographs of many original prescriptions and documents belonging to the author's private library. Concurrent events of political, economical, and literary history are constantly brought to the reader's attention, thereby fulfilling the author's purpose of helping the student to orient himself. The style of writing is pleasing, modern in its phraseology, and always holds strictly to the points under discussion. A chronological table of considerable length and scope concludes this most interesting book.—L. G. Bodkin.

How I Came to Be, The Autobiography of an Unborn Infant. By Armenouhie T. Lamson; pp. 179, 2nd edition, 21 illustrations. The Macmillan Co., New York, 1926.

While not designed for the use of the medical profession, this book is one that should be known to the average practitioner so that he may recommend it in suitable instances to his patients. It is a rather unusual piece of literature on the subject of the prenatal life of a baby, but withal accurate as regards scientific information. It will logically answer in a manner not too technical the questions that may arise in the minds of prospective mothers. It will also be a great aid to a parent or teacher in the difficult position of having to explain these problems to a young boy or girl. It will be of value, generally, to all women seeking knowledge on this intimate and usually whispered topic—with the single exception of those unfortunate individuals who are already too introspective for their own good.—L. G. Bodkin.

Hospital Housekeeping and Sanitation. By Nora P. Hurst, R.N., McKeesport Hospital, McKeesport, Pa.; pp. 155, C. V. Mosby Co., St. Louis, 1926.

This manual covers the general subject of hospital sanitation in as brief a manner as possible, outlining the subjects on which probationers of the training school should be instructed. Each chapter of the book ends with a rather exacting, though instructive, arrangement of practice for the class on actual problems of sanitation.

A Manual in Preliminary Dietetics. By Maude A. Perry, B.Sc., Director of Dietetics, The Montreal General Hospital, Montreal, Canada; pp. 146, C. V. Mosby Co., St. Louis, 1926.

A brief, concise little manual on the subject of dietetic, arranged in the form of fifteen training school lessons, for the purpose of simplifying the task of the instructor and at the same time equipping the student-nurse with the necessary data in printed form. The book is intensely practical, and wastes no time on superfluous matter.—L. G. Bodkin.

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The Game of War

The Chemical Warfare Service of the regular army has consistently advocated further development in the use of chemical agents, such as gases, as the most humane of military weapons. "The effectiveness of chemical weapons is due more to the large numbers of temporary casualties which may be produced than to the relatively small number of fatalities which may be caused." Such arguments sometimes make one vision the battlefield of the future as simply a struggle between opposing armies to anesthetize each other. Then why not arm the troops with Allis inhalers and Squibb's ether and give the decision to the side showing unanesthetized survivors? The army's spokesmen seem to be all for humane warfare, so why shouldn't our suggestion intrigue them? We are taking them at their word, rather naïvely, perhaps, that "large numbers of temporary casualties" should serve well enough the purposes of Mars.

Moved that Allis inhalers and canned ether be substituted for machine guns and heavy ordnance in the Departmental budget, after suitable agreements with the foreign powers.

As a strong inducement looking to the adoption of the foregoing method of waging war we should like to make the point that regarded simply as a game football would not be in it. Can one not imagine the excitement and interest that would attend a combat, let us say, between the Turks and the Mexicans, or between the Irish Free State and the Soviet Union of Republics, on some point of national honor? Since spectators would incur no physical risk on the side lines gate receipts would be far larger than in the case of football, and could be pooled in the cause of public health.

It is obvious that in such a game, as in football, there would be many technical developments, with definite rules as to tactics and strategy and all the exciting accessories that could be wished for.

A Geneva Board could be charged with the duty of fixing the Allis inhaler specifications, or those relating to any o er like devices, and the ordering of the quality of the ether or other anesthetics used. This board would make and revise the rules and try offenders against its directions and decisions.

What purpose served by war would not be served by our sportsmanlike substitute.

To placate the incorrigibly bloodthirsty, we hasten to admit that under such a system there would, of course, be some fatalities. The expectation of such occasional casualties ought to satisfy eager sadists not yet willing to abjure utterly the ghastly glories of the old dispensation.

The *New York Times*, under date of February 14, made the point, editorially, that the old aim of killing as many of the enemy as possible must be partly abandoned under modern conditions, since "if too many of them are killed, not enough will be left to produce the wealth needed for paying indemnities to the conquerer. An ingenious defense of the use of gas in war has been that it would work in line with this new argument. By being scientifically gassed, great numbers of combatants might be put temporarily out of the battle so that their commanders would have to yield to superior force; but later on these disabled soldiers would recover, and, after the peace, could be set to work to help their country pay its war indemnity."

All power to the army in its efforts to effect nothing more in warfare than "large numbers of temporary casualties."

Psychic Compensation of Organ Inferiority

Dr. Albert Adler's presence in the United States has intensified interest in his famous child, the inferiority complex.

That factor in producing the complex which has to do with organ inferiority seems especially interesting to us. When this factor enters in, in the shape of a club-foot or what not, one whose inferiority feelings might not otherwise be greater than the next man's may experience an intensification of such feelings and find a more pressing necessity to compensate, in other words, to achieve superiority.

Such psychic compensation undoubtedly accounts for some phenomenal personalities. The littleness of Napoleon and Cæsar was probably their greatest spur.

Byron's sensitiveness about his club foot is a case in point. "The lame brat," as his mother called him, lived to show the world of men that he was greater than they, despite his defect.

Adler points out that many great painters have had poor vision or were even color blind (Whistler), and sees in the very fact the reason for their efforts and achievements.

Milton, the albino, became blind. Adler believes that not being able to look out Milton looked in, that is, he became a great imaginative poet.

It is significant how many composers have been partially or wholly deaf—Beethoven, Dvorak, Mozart, Smetana, Robert and Franz.

The deafness of our own Edison seems to have played a considerable part in his work on sound.

It is all very well when psychic compensation takes

useful forms. The trouble is they are much more often useless or vicious.

Crime a Neurosis

Dr. Max Schlapp, Professor of Neuropathology in the New York Post-Graduate Medical School, thinks that crime and the criminal are essentially medical problems. It is the hurry of modern life which is causing breakdowns and inability to meet strains, hence the "leisure" class whose ultimate expression is in crime. This speed of living, to which so many are increasingly unable to adjust, is a factor accounting in part for the tremendous rise in the number of the insane, the feeble-minded, the emotionally unstable and the generally neurotic. From these groups come the most and the worst of our criminals. Schlapp believes that the criminal is always decidedly abnormal in some respect.

Since the constant progress in mechanical invention will mean a continued speeding-up in methods of living, future generations will produce emotional defectives in greater proportion. One can only conceive of great detention hospitals for defective children and criminal adults, rather than jails. Doctors and not jailers will preside over these institutions. So Dr. Schlapp reasons.

If all this is true it would seem that the possibility of checking crime will become more and more remote. We shall have only a system of palliation. For that which is at the bottom of the trouble—speed—is to become intensified.

Dr. Schlapp's facts seem not to lessen his optimism. The same facts seem disheartening to us.

Dance Mortality

Elderly lovers of the dance recently paused in their revelry when an eminent medical authority declared that the present craze for dancing is taking five years from the lives of persons over sixty who indulge. "The harmful part is that the man or woman over sixty usually insists on a youthful dancing partner. They hire youthful instructors to teach them the latest steps. Then, rain or shine, well or sick, they keep their appointments because they will have to pay even when they don't appear. Scores of deaths are directly traceable to dancing when not well."

That may all well be, yet it has to be offset considerably by the fact that the lives of many old codgers are undoubtedly lengthened by reason of the psychical and physical kick which they derive from their Terpsichorean gyrations.

Some European Birth Rates

France seems to differ greatly no longer with respect to her birth rate, for, in 1925, while her own birth rate was 18.07 per 1,000 population, that of Sweden and England was lower still. Still more significant was Germany's drop from the 35.7 rate of a quarter of a century ago to a rate in 1925 of 20.5. The Swiss birth rate is also dropping downward with toboggan-like speed.

Shallow critics will declare these to be dying nations, but such changes in the birth rate are most auspicious from many viewpoints. We know well enough whom they will displease.

The International Medical Club

The recent organization of the International Medical Club of New York is a great step forward in making actual that which has always been really theoretical. The impersonality of the medical press, now the chief means of communication, is to be supplemented by warm human contacts on a larger scale than heretofore. There is to be one medical community and no more barriers. Colleagues all, we are to be amalgamated and cemented into a genuine internationalism. The warm breath of life is to replace formalism and aloofness.

Even though this wise move internationalizes only the healing art it should have a profoundly civilizing effect making for peace among the nations. As Charles Lamb said, you can't hate a man if you really know him. Primarily, of course, the aim has to do with the interests of science.

Miscellany

AN OPEN LETTER TO THE MEDICAL PROFESSION

A Plan for Unfolding the Project of Applying Motion Pictures to Medical Education

J. F. MONTAGUE, M.D., F.A.C.S.
UNIVERSITY AND BELLEVUE HOSPITAL MEDICAL COLLEGE CLINIC,
New York City.

The medical profession has recently taken notice of the fact that a modern industry has placed at the practical disposal of teachers an extremely effective implement, namely—the motion picture film. Though this application of films to teaching technique has been suggested by various persons for the last ten years it seems that the prevalent juvenile crime wave has been a necessity in calling the attention of the public, both lay and medical, to the educational possibilities of the "movies". The fact that such possibilities may be misappropriated and perverted is self evident. In the case of entertainment movies proper selection, as suggested by the National Board of Review, certainly would have obviated many of the monstrosities which have been thrust upon the public as recreative pabulum.

Since we, of the medical profession, are at present on the threshold of an activity along the lines of medical and surgical film production a few suggestions from the pioneers of the field may, if heeded, save us from the distressing spectacle of unscientific "scientific" films. It is my purpose here to point out the possible aberrations which may occur and to present, with a deep consciousness of the incompleteness of its detail, a plan for unfolding the project of applying motion pictures to medical and surgical teaching.

Perhaps the most unfortunate event that could possibly occur at this phase in the formation of the enterprise would be the hasty and ill considered attempts of *every* medical man to make his own films. Be it well noted that I deprecate only "ill-considered" attempts and not all such individual attempts. The marvelous expansion of radio witnessed within our own times has been due almost entirely to the widespread experimentation of amateurs. So, too, in medical motion pictures much good can come from the amateurs. But there is one important difference to be recognized and that is that moving pictures cost money to produce and mistakes are costly. Hence our amateurs are liable to quickly kill off an enthusiasm which if properly nutured could form the basis of a substantial and progressive new school of thought in medical teaching. My first suggestion, therefore, is that any medical man contemplating this work should thoroughly acquaint himself with the most successful methods now known for making medical movies. By acting on this suggestion one will avoid the errors

and faults which all pioneers have made. There are many special requirements of medical cinematography which the ordinary camera man is not familiar with. Indeed, there are many "tricks of the trade" wherein the ordinary camera man can learn from those of us who have encountered these difficulties and have overcome them. To be sure there are quite as many, if not more, items of technique whereof we are ignorant. All in all, I believe it will be fairer and, in the main, most satisfactory to acknowledge the fact that the art of photography is a special study and in fact "another man's job". Until we have cameramen with a medical education I believe it will be found most expedient to have the doctor content himself with directing the picture rather than actually taking it; to reserve his intrusion into photographic matters until some special problem arises which makes consultation between medical director and lay cameraman necessary.

Quite apart from the danger of overzealous and unrestrained amateur medical cinematography is the very real danger of the establishment of a virtual monoply on medical films by one of the groups of medical men who, by virtue of superior capital and organization will perhaps seek to still further augment the inferiority complex which they now, in less subtle manner, wish upon the small town and city surgeon at the various association meetings. Such an event could only be construed as a catastrophy to a worthy project since it inhibits the right of freedom of the press. Though it may not be realized at this time the film is just as much a part of literature as is the book. The mechanical fact of it being printed on celluloid rather than on paper in no way negates the fact that it *is* an avenue of expression, a vehicle of speech.

To solve the equation for X seems the logical task for anyone who like myself has the courage to tell the truth when the truth only serves to place us on the horns of a dilemma. If we *should* avoid uncontrolled individualism and, on the other hand, *must* avoid selfish or bureaucratic monoply you may well ask what happy medium *can* we strike.

The solution I propose is that Mr. George Eastman be allowed the honor of establishing a "Medical Film Foundation Inc." This proposed institution shall be endowed by Mr. Eastman with sufficient material and personnel to produce medical films. It shall, moreover, make films based on accepted and recognized medical books. The selection of suitable books shall be arrived at by polling the entire medical public or in response to a sufficient number of written suggestions. This is essentially similar to the system used in Carnegie libraries. If there is a sufficient number of inquiries for a book, it is purchased. The "Medical Film Foundation" shall furnish to any recognized medical school, medical society or responsible group of medical men any of its films upon payment of a rental fee and transportation charges.

The "Medical Film Foundation" shall furnish to any responsible group of laymen such medical pictures as are intended for lay use. The medical films made shall be directed by the author of the medical book being filmed or by some properly qualified doctor of medicine delegated by such author. The technical features of medical motion picture production shall be in charge of the technical staff of the "Medical Film Foundation".

The advantages of the plan I propose are manifold.

Firstly, we may be assured of the highest technical excellence of the film produced. Mr. George Eastman is the father of motion picture film and the staff he has trained are the foremost cinematographic experts in the world.

Secondly, the administration and control of the "Medical Film Foundation" by business men will remedy a notorious defect in many enterprises run by the medical profession.

Thirdly, the complete elimination of professional control will also completely eliminate the regrettable but actual professional jealousy which exists in many medical projects and works to their great detriment.

Fourthly, it assures the medical profession of an adequate and proper supply of educational films that can be of most service to them.

Fifthly, it assures continued freedom of the medical press. In making recognized medical books the basis of proposed medical films two purposes are served. (1) It assures the profession of material which has been thoroughly appraised before being released. The review of books by medical magazines throughout the country; the record of sales and finally the results of a referendum will all be effective guides to the selection of suitable and worthy subjects for films. It thus substitutes the principle of selection as advocated by the National Board of Review in respect to ordinary movies for the repulsive principle of censorship as advocated by fanatics. (2) It stimulates the production of medical books of real value. The distribution of these films will increase rather than decrease the sale of the books filmed since if the film appeals, the profession will want greater detail than can reasonably be crowded into a film. If there be any doubt on this point attention is invited to the enormous sale of novels initiated by the feature pictures now presented throughout the country.

In conclusion it may be said that the medical profession has always acquitted itself in a generous fashion. Every doctor daily gives his time, energy and care to charity cases in the hospital wards and ofttimes in his practice. Mr. Eastman can respond on the behalf of the laity with this generous gesture which shall build for him an undying memorial in the minds and hearts of all humanity.

30 East 40th Street.

Glands of Internal Secretion

(*Concluded from page* 133)

a period of seven to eight months, then her mania returns and another transplantation is required. During the operative intervals she is entirely normal.

A proportion of women at the critical age become affected with hysteria, which like other mental maladies of the minor type is related to erotic emotions. In such cases it is generally found that a mental injury of a sexual nature was incurred at puberty.

This incident, which has profoundly shocked the mind, has been kept in secrecy and may have been forgotten. There is so to say, a morbid growth of the mind, which must be discovered and removed before the patient can be relieved.

Mental disorders of various kinds are so common during the "change of life" that the term "climacteric insanity" has become established.

In practically all of the above conditions transplantation of ovarian tissue is specific and patients are definitely relieved. At times the transplantation must be repeated. In other instances one transplantation is all that is required.

412 West End Avenue.

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Contemporary Progress

Concerning the Etiology of Measles

Ernest C. Dickson, Professor of Public Health, Stanford University Medical School, thus summarizes our knowledge of the infectious agent in measles. In 1758 Home, in Edinburgh, and Herne, in France, believed that they had demonstrated that measles could be transferred from a patient to susceptible children by means of cotton which was soaked with the blood of the patient and applied to incisions in the arm of the susceptibles. There is some doubt as to whether they really produced measles, although several investigators have reported that they confirmed their observations. However, in 1905, Hektoen proved that measles can be transferred from patients to susceptibles by injecting blood of the patients into the veins of the susceptibles, and showed that the virus is present in the blood at least twenty-four hours before and thirty hours after the appearance of the rash.

In 1917 Tunnicliff reported the isolation from the blood of measles patients of a minute, filter passing, diplococcus which produces a green pigment, and she later showed that the same organism can be cultivated from the secretions of the respiratory tract at the same time as it is present in the blood. Specific antibodies for this organism can be demonstrated in the serum of patients who are convalescent from measles, and skin tests, analogous to the Schick test and the Dick test, can be demonstrated in susceptible individuals. Moreover, Tunnicliff and her associates showed that a disease which closely resembles measles can be produced in monkeys, rabbits and guinea-pigs, by injecting them with this diplococcus.

Several investigators, notably Thomson, Caronia, and Ferry and Fisher, have also isolated diplococci which appear to differ somewhat from those described by Tunnicliff, but still others have confirmed Tunnicliff's observations, and Hoyne and Gasul believe that the apparent differences are due to differences in cultural methods and that all are really dealing with the same organisms.

Be that as it may, the evidence is strongly indicative that Tunnicliff, and probably the other investigators have established the bacterial cause of measles.—*Cal. and Western Med.*, March, 1927.

Treatment of Acute Infectious and Contagious Diseases

J. H. Musser, New Orleans (*Journal A. M. A.*, April 9, 1927), reviews the histories of the patients who were admitted to the contagious disease ward of the New Orleans Charity Hospital for the last eleven months, paying special attention to scarlet fever, erysipelas, meningitis and measles. There were fifty-six cases of faucial and tonsillar diphtheria. The routine treatment of these patients is the administration of 20,000 units of antitoxin. In small children under 3 years of age requiring large doses, this is administered in divided doses. Ten thousand units are given intramuscularly and 10,000 intraperitoneally. Ten cases of diphtheria of the nose, ear or conjunctiva were also treated by antitoxin. In the local treatment of these cases, gentian violet is employed. Irrigation of the nose and ears proved beneficial in getting rid of the organisms. Forty-seven cases of laryngeal diphtheria were encountered. The children suffering from this severe type of diphtheria were given an initial dose of antitoxin of from 20,000 to 30,000 units, and if there was not a very prompt improvement in their symptoms, the dose was repeated in eight hours. Forty-one children with whooping cough were under observation, and of these forty-one, ten died from the complicating bronchopneumonia, the deaths occurring in small babies under 2 years of age who were brought into the hospital frequently in the last stages of this disease. The only new therapeutic procedure that has been employed in the treatment of this disorder is ether. Musser believes that ether, 10 cc. in oil, injected into the rectum every eight hours, is equally efficacious in controlling the severe paroxysmal cough. Neither vaccines nor any form of so-called specific therapy have been used. There have been treated twenty-eight cases of scarlet fever with the serum as prepared by a method modified somewhat from that of Dochez and now obtainable on the open market. The dose of the serum given was 10 cc. and it is given intramuscularly. The rash disappeared in the majority within twenty-four hours after the injection of this serum. The throat symptoms disappeared rapidly, and the fever fell by crisis or rapid lysis shortly after the injection of the serum. In only one of the cases was there a severe serum reaction. Repeatedly, patients were discharged seven or eight days after they were sent in to the ward, and no case of secondary scarlet fever has appeared in their families. Of the twenty-nine patients who were admitted with a diagnosis of meningitis, twenty-eight died. Eighteen of these were caused by pneumococci, five by the tubercle bacillus, one by an indefinite streptococcus, two by influenza bacilli, two by meningococci, and one by some undetermined organism. The last three patients with tuberculous meningitis have been treated with intraspinal injections of oxygen. Daily drainage of the spinal canal followed by the introduction of oxygen has been employed. The oxygen has been given in doses of 15 cc. gently injected through a spinal puncture needle. There was a very definite improvement in the patients to whom oxygen was given. In pneumococcic cases Musser lavaged the spinal canal by means of the combined cisternal lumbar puncture with saline solution, followed by the injection of polyvalent antipneumococcic serum. There has been some improvement in these patients, but the condition has not been cured. The treatment of measles with convalescent serum is endorsed. The procedure has been to bleed the patient just before discharge from the hospital, allow the blood to clot, decant the serum, and add 0.5 per cent tricresol. The serum is kept until the next case of measles occurs. There have been thirty-one cases of erysipelas with two deaths. Rivers and Tillett suggested that in erysipelas the spread of infection might be prevented by injections into the margins of the healthy skin of immune serum. In fourteen cases of erysipelas, such injections were made. This method of treatment Musser believes to be very efficacious in stopping the local spread of the disease. It does not, however, seem to have very much immediate effect on the general toxic symptoms and, in addition, has the disadvantage that it is time-consuming to inject a large area in such a way that the entire bordering skin is infiltrated completely. The last eleven cases have been treated entirely with antistreptococcic serum. There was a prompt amelioration of the toxic symptoms, a sharp drop in temperature and rapid disappearance of the lesion.

The Commonest Focal Infection

Edward E. Cornwall, of Brooklyn reminds us of the intestine as a source of infection.

A meat diet favors growth of the saprophytic or putrefactive types of bacteria, while on the other hand, a lactovegetarian diet, by favoring growth of the acidophilic types of bacteria and thereby change in the chemical reaction of the bowel contents, to a certain extent inhibits growth of the putrefactive types.

Matthews says (Physiological Chemistry, 1925):

"From the decomposition of proteins the most toxic substances are produced."

Amino acids are inert, but bacteria can tear them to pieces, and some of the fragments are very toxic: phenol and cresol may be set free; indol and scatol are produced by putrefactive action from tryptophane, cadaverin from lysin, hydrogen sulphide, which is capable of dissolving red blood cells, from cystin, and the highly toxic B-iminazolylethylamin, hyrdoxethylamin and indolethylamin from histidin, tyrosin and tryptophane, respectively.

Amines of the ptomaine class produced by putrefactive bacteria "have in many instances a powerful effect on the blood pressure, and may be of great importance in the production of high blood pressure and resulting thickening of the arterial walls."

"There can be no question of the importance of these putrefactive substances in the well being of the individual."

"None of the products of carbohydrate decomposition are harmful so far as known . . . By carbohydrate fermentation acidity is increased. . . . . Many bacteria cannot metabolize in the presence of acid."